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A MONTHLY JOURNAL
DEVOTED TO DISEASES OF THE
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FOR GENERAL PRACTITIONERS AND SPECIALISTS.

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THE LARYNGOSCOPE.

VOL. II. ST. LOUIS, MO., JANUARY, 1897. No. 1.

ORIGINAL COMMUNICATIONS.

AN ESSAY ON THE ORGANS OF TASTE.

AN ORIGINAL MONOGRAPH.

Presented to the French Laryngological Society, of Paris.

BY J. MOUNT BLEYER, M.D., F.R.A.M.S., LL.D., OF NEW YORK CITY.

[CONCLUDED.]

While our knowledge of the organs of taste is somewhat unsatisfactory, we are unfortunately not much better off as regards our knowledge of the nature and conditions of the external influences which call forth a sensation of taste of whatever quality. We know well what substances produce such sensations, and bear in mind a correct idea of the kind of impressions connected with their use, so that we again recognize the substances by that impression, or, even without their presence, easily recall in imagination the sour, or sweet, or bitter qualities which distinguish them. But this knowledge, in which the epicures must be recognized as graduates, though the basis of our practical use of the sense of taste, avails us little or nothing to a mastery of the physiological theory. We know even more: we know accurately the physical and chemical properties of the greater number of sapid substances, and are ignorant, notwithstanding, of the capital question, which property is it which makes a substance sapid, and

qualifies it for the excitement of such or such a sensation? We know no single property common to all sapid matters which can be even remotely identified as the cause of their operation on the nerves of taste, and in which we can seek the source of their peculiar action.

To illustrate our inability in arriving by physical or chemical analysis at any decisive results on this subject, I shall cite one or two examples. Sugar may serve as the representative of sweet substances; we know that it is composed of twelve atoms of carbon, hydrogen, and oxygen, and how it is affected by all chemical agents; we know, also, its physical properties, such as solubility in equal proportions, requiring here no further discrimination. How is it now that this substance in solution, on contact with the mucous membrane of the tongue produces an excitement, whether chemical, thermal, electrical, or mechanical, which gives rise, by its action on the ends of the nerves, to that specific modification of the nervous current to which an appropriate sensation of taste instantly responds in the brain? It may well be supposed that the sugar does not take effect on the nerves hidden under the epithelium until imbibed by the latter, and is thus brought into proximity with their extremities; but even if it penetrated to immediate contact with them, in what respect is the solution of the question advanced? If we bring dissolved sugar into contact with the nerves of the muscles not a fibre stirs; a sufficient proof that sugar is in itself no "adequate" irritative of the nerves. What, then, qualifies the sugar for excitation of the nerves of taste? The obvious answer is, the presence of some special arrangement at the ends of these nerves (the taste-buds). But of what sort is it? (This arrangement has been explained in the above pages under the minute anatomy). How, and by what means, does the sugar operate upon it? How, through those means, is a nervous excitation produced? This is an enigma to be solved later by physiologists, as it offers at present so many obstacles.

The matter becomes still more inexplicable when we consider that, in the first place, sugar is not the only substance that tastes sweet, but that a multitude of other substances in no respect resembling it, either physically or chemically, produce the same sensation in the organs of taste; and, in the second place, that still other substances, which are most nearly related to sugar, having even the same composition, generate either no sensation at all or produce one of a wholly different character. What, for instance, have sugar and a combination of lead with acetic acid in common that both should taste sweet? What sulphate of magnesia and quinine that both should taste bitter? What distinguishes sugar from starch that the former should produce

a sweet taste, the latter no taste at all? No answer but a general one can be given, and I should but freight my paper with useless verbiage did I give a list of all the substances having properties thus comparable.

As regards other senses, that of sight, for example, we are in a better position. True that even here we do not know altogether in what consists the operation of light on the extremities of the optic nerve, whence result their excitation and mediately by the sensation of light. But we do know, in the first place, that at those extremities there exists a wonderfully complicated apparatus* in which we can recognize the intermediary between light and nerve, through whose agency the former becomes an adequate assistant of the latter; and we know, in the second place, by what maintenance of the outward agent, light, the quality of the sensation is determined; it is practicable to state mathematically the degree of momentum adapted to each sensation. The undulatory movements of the luminous ether produce the excitation of the nerves of sight; the velocity of those movements qualifies the sensation so as to produce the colors which we see. A definite amount of this velocity is universally necessary for the production of the excitation; and we are able to specify the smallest number of oscillations in a second of time which cannot be diminished, the largest number which cannot be increased, without producing in either case an extinction of the effect of the waves of light on the visual nerves; we are able, also, to state with entire certainty the unalterable number of oscillations respectively pertaining to the perception to which we give such names as red, green, yellow or blue. So it is, also, with regard to the sense of hearing; what has just been said of the waves of light and their relations to the organs of vision and impressions of color may be transferred, with only verbal changes, to the waves of sound which produce the excitation of the auditory nerves.

However unknown to us the properties which give substances the power of producing sensations of taste, and the way in which they operate on the nerves of that sense, it is at least some compensation that we know to a certain extent the conditions under which a substance empirically recognized as an object of taste exerts its specific power, and the circumstances on which the intensity of the impression depends. First stands the fact that a substance can produce no such impression unless it reaches the seat of this sense in a fluid form; if of a solid nature,

* For further details of this part of the minute anatomy I can refer you to the study of the silver-prepared sections of the birds and other mammals' retinas by the Golgi methods. Quain's Anatomy has many of them. For their physiological study reference must be made to works treating on that subject.

it must at least be first dissolved in the saliva. This condition results from the necessity, which was above provisionally assumed, that the sapid substance shall penetrate through the coat of epithelium to the mucous membrane where these taste buds appear disseminated. A solid body, even reduced to the finest powder, could not make its way through the closely compacted cells of which the covering of the tongue consists; but in solution it will be imbibed first by one and then by another stratum of these cells, until it finally reaches the underlying and sensitive surface. Now these successive imbibitions may be supposed to imply the lapse of a sensible interval of time, and yet experience teaches us that no interval can be appreciated between the moment of contact with the tongue and that of the ensuing sensation. Still, and in spite of this apparent contradiction, we must insist that no alternative remains for us but to accept this theory of a gradual transmission, seeing that it is supported by the admitted necessity of solution for producing sensation of taste, and no other supposition is possible. Moreover, we have no knowledge of the rapidity with which such transmission is accomplished, so that there is at least no proof that it may not be sufficiently great to render the interval in question quite inappreciable.

From what has been said it results that a body which is insoluble in water, and cannot therefore fulfill the above condition, is incapable of yielding a sensation of taste. It must not, however, be conversely reasoned that solubility in water is the actual quality which in itself fits a substance for the excitation of the gustatory nerves, etc. That this is not the case obviously follows from the fact that many substances readily soluble in water are tasteless—nay, that water itself is so. Were solubility as directly the condition of taste as the undulations of the luminous ether are the condition of light, a substance to be more sapid—that is, capable in smaller quantity of conveying a more intense sensation should be the more soluble; but this common experience refutes. Extremely soluble bodies sometimes convey a very faint taste; others, soluble only with difficulty an intense one. The degree of concentration of the solution requisite in general to produce a sensation of taste is very different with different substances; while some act in a very diluted state, others require a concentration nearly equivalent to saturation.

It has been stated that as regards odorous substances, a scale has been established by experiment showing the degree of impregnation of inhaled air, requisite in the case of different articles for the production of a sensation of smell; and in like manner it has been attempted experimentally to assign values to the different degrees of dilution which differ-

ent objects of taste will bear without thereby losing their property of gustatory excitation. The numbers thus found afford of course no absolutely exact valuation, but as a general consideration they furnish in this respect a sufficiently accurate comparison of the different substances for trial. I give here some of these results. It would perhaps be scarcely supposed that sugar, unfavorably in this scale of values—indeed, the most unfavorably of the compared substances as regards their relative capacity for dilution without loss of taste. Solutions of sugar which contain less than one part of sugar to 99 parts of water, no longer excite any perceptible taste of sweetness. Common salt bears a somewhat greater degree of dilution; the universal remedy for intermittent fever, quinine, remains perceptible under a greater degree; while sulphuric acid (oil of vitriol) takes rank before all; water, in which only one-ten-thousandth part of sulphuric acid is dissolved still tastes perceptibly sour. Acid substances, as many from experience are able to testify, gained either by cooking or otherwise, most readily impart their sapid qualities. On what conditions these surprising diversities depend it is beyond our power to explain.

With one and the same body, the intensity of the sensation of taste which it excites increases with the progressive concentration of the solution; a law which needs no other proof than daily experience. As regards the comparison of intensities, it will be well to remember what is thought as in the physiology on sensation in general, especially on those of touch; we have no measure by which can be estimated an impression of taste, so as to give it an exact numerical expression. If a test be made, one after the other, of a solution of sugar of different concentration, we cannot, if the difference is slight, decide which is the sweeter; we cannot say that one tastes half, twice, thrice, or ten-fold as sweet as another with which it is compared. The intensity of the sensation depends not alone on the degree of concentration of the solution, but on several other circumstances admitting of explanation. It is easily understood that the strength of the sensation increases in proportion as the surface is larger on which the solution operates, and the time longer during which it is in contact with that surface. Just as of two bodies of equal weight, that seems to be heavier which presses on a larger surface of the skin, and thus gives excitation to a larger number of the nerves of touch, so the same solution of sugar will seem sweeter, if diffused over the whole area endowed with the same taste, than when merely a drop of it touches a circumscribed part of the mucous membrane with its sensitive taste organs or buds. Thus the intensity of the sensation increases with the sense of the nerve fibers simultaneously excited, because the single

impressions seem, in conception at least, to be in some measure combined with one another. The more intense effect produced by prolonged contact of the object with the tongue may be inferred to result from the penetration of greater quantities of the substance to the nerve extremities of the mucous membrane; and for this, too, an analogy may be found in the operations of the sense of touch. A hot surface seems less hot on transient than prolonged contact with the skin, from the circumstance, in the first instance at least, that time is wanting to conduct the particles of caloric in sufficient quantity through the skin to the ends of the underlying nerves. One of the most essential conditions for increasing the intensity of a sensation of taste consists in the friction of the solution against the surface of the tongue, or of the latter with the solution against the hard palate. This resource comes into play habitually in the act of taking either solid or liquid food, but we avail ourselves of it more particularly in tasting, with a view to a more accurate judgment of the flavor of any substance. In this case we do not content ourselves with laying the object of which we would form a judgment upon the tongue and quietly awaiting the sensation, but bring it by an insipient movement of deglutition to the hinder part of the tongue, and press this in turn against the hard palate. It is at the moment of this contact, produced by a movement which is indispensable in the act of swallowing, that the most vivid sensation arises, as every one may convince himself who pays attention to what occurs during the process of taking food. For further confirmation of the fact, the following experiment may be practiced: Let the tongue be stretched out, with the mouth widely opened, so that the former can no where strike against the roof of the cavity, and a drop of dissolved sugar or vinegar be placed upon its surface, only a very weak sensation will ensue, with an instinctive effort to press the tongue against the palate, because we are unaccustomed, except by this means, to conduct the operation of tasting. The sensation will instantly become stronger, if, with the finger or a brush, we rub the solution upon the mucous surface of the tongue. Here also, we are as yet at a loss for any certain explanation; we can only remotely conjecture how the means spoken of serve to promote and intensify the excitation of the nerves of taste. It may be that the pressure and rubbing facilitate the intermixture of the solution with the salivary stratum which covers the membrane and its penetration among the different cells and those of the epithelium, or that the pressure applied to the extremities of the nerves renders these more sensitive and excitable. This latter conjecture, though received with favor by some, has, in the opinion of many others, little probability.

So long as we know nothing more of the positive means or the mode by which substances communicate sensations to the nerves of taste, all hypotheses on this subject must be air-built speculations.

How a mechanical force, a compression of the nerves alone, can heighten their excitation must be mere matter of conjecture, and finds for its support no analogy in the action of other nerves. But since the physiologists have taught us more regarding the minute action of the taste-buds in direct connection with these nerves we must be content, to consign this, with the many other questions which we have been obliged to leave unanswered, to the category of riddles, for whose exact solution we can perhaps only look to a distant future.

From experience it is thought that the sense of taste not only possesses a very different degree of delicacy in different individuals, but that even in the same individual its delicacy is sometimes more, sometimes less, exquisite. The causes of this difference are not in all cases easily shown. It cannot be denied that a different degree of functional activity of the organs of taste may be innate; but to what parts of the organ the difference is attributable and what properties adapt this or that part to the reception of a keener impression, and its conversions into a more distinct sensation of taste, cannot in the present state of our knowledge be determined. It is but seldom that we observe in the taste, the tongue, those gross and obvious defects which might lead us beforehand to infer an obtuseness of the sense, for instance, as a thick and corneous condition of the epithelium, perceptible rugosities, etc. In most cases of difference of fineness of taste in different persons, the cause is to be sought not so much in congenital or casual deviations of the apparatus, as in diversities of cultivation, of education of the sense. It is a remarkable fact that, through judicious practice directed to that end, the operations of all our senses may be improved to an extraordinary extent, and the way in which this refinement is brought about by diligent practice presents one of the most interesting questions of physiology. Is the mechanism of the organs of sense improved by use, or is it only that with an unchanged condition of the original mechanism, more facility is acquired in understanding their operations? In other words, are material changes produced by use in the apparatus of the senses, or is it the immaterial principle of our nature which derives advantage from that use? Probably both suppositions are, in a certain degree, true. It would be difficult to adduce direct proof of the improvement of the proper apparatus of the senses, but analogies, drawn from other physiological apparatus, give countenance of its possibility. A muscle becomes so changed through strenuous use,

that not only are its powers of performance increased, but a higher activity of nutrition supervenes and the number of its fibres, on which depends its strength, is also increased. The blood secretes more material applicable to the formation of such fibres in employed than in unemployed muscles; a muscle, indeed, precluded from all activity, ceases to receive nourishment and perishes through inanition.

Perhaps also the quality of the nutriment supplied is improved by the exercise of the muscles, so that, without actual increase of the fibres, those already existing may be qualified for greater manifestation of power. Daily experience affords proof of the above. It needs but to compare the firm and prominent muscle in the arm of a smith with the flaccid, scarcely-developed muscle in that of a recluse, the muscular leg of a chamois hunter with that of a sedentary artisan. But there is often to be seen also in individuals of spare habit, in whom there is outwardly no striking muscular development, a surprising strength and energy of the muscles, which would indicate the enhanced nutrition of those organs arising from continued use. The muscles, then, being susceptible of this improvement by use, what should forbid our inferring that the working capacity of the apparatus of the senses may, in like manner, be nourished to a higher degree of perfection by habitual exercise? But whether the whole result should be referred to habitual use of exercise, is extremely doubtful; for those, at least, to whom soul and nerve apparatus are not identical. While it may well be believed that an organ of sense may be improved to such a point, by material treatment, as to be more sensitive to relate impressions, it would seem impossible to explain by a simply improved mechanism the vastly increased delicacy of discrimination acquired by practice in distinguishing different impressions or different degrees of the same quality of impressions. If we consider the soul as an immaterial principle, which is indeed consigned to the material organs for all its intercourse with the outward world, and yet is so far independent as to be capable of a different cultivation through the employment of the same unchanged organs, we may also assume that it first gradually learns to interpret and discriminate the permanent processes in the sensitive apparatus, and will of course make the greater progress therein, the greater its practice. I am here venturing, however, into a province where no ordinary sagacity is requisite to find a sure route, and to pursue it without stumbling upon prejudices or deviating into by-paths. I return, therefore, to the immediate subject before me.

Examples of the degree of delicacy to which the sense of taste may be trained by use need not detain us. Everyone may find them among

his acquaintances, and few probably are without a knowledge of some connoisseur in wines, who, from his taste of the precious juice, will undertake to pronounce the year and vineyard which were privileged with its production. Though in such cases there may be often pretense or self-deception, yet it is certain that the sense of smell and even that of touch, afford for these trials a degree of succor to the sense of taste; even common parlance recognizes the "bloom," the "bouquet," or again the "harshness," of certain objects submitted; still there remains for the share of the sense in gustation enough to secure respect for its educational capacity. It is not, however, in different individuals only that striking differences in the delicacy of the sense of taste occur; they present themselves from time to time in one and the same individual, as the experience of everyone will testify. Thus it happens, not unfrequently, that a severe acute catarrh migrates from the pituitary tunic of the nose to the mucous membrane of the mouth, and occupies the latter to such an extent that in a scarcely exaggerated sense all taste may be said to be lost. In this uncomfortable state, food excites only the impression of touch, often improperly confounded with what is called a "clammy taste;" though in truth no genuine sensation of taste exists; with the exception perhaps of that generated by intensely sour or bitter objects, which still is scarcely more than a counterfeit of the sensation excited by the same objects in a healthy condition of the organs. In the same way loss or deprivation of taste is a very regular concomitant of many disorders of the stomach and bowels, manifested in some cases by hebetation of the organs, in others by perverted sensations, as when, for instance, all substances leave a bitter after-taste. We may remark, finally, that very intense impressions of taste blunt the susceptibility for succeeding and weaker impressions of the same quality; whence, after partaking of a sour salad, the wine bibber may smack his lips over the sourest products from the vineyards of Grinneberg; while, on the other hand, the sensibility to impressions of another quality seems to be exalted, so that after the enjoyment of a sweet confection, the least acidity causes the best wine to taste like vinegar. For these facts we can propose any superficial and fragmentary explanations. As regard the bodily ailments above spoken of, it is safe to make of the more or less thickened and furred envelop of the tongue a scape-goat on which we may cast, in the first instance, the blame of the defective or vitiated sensibility to objects of taste. We may suppose, moreover, that in catarrh exudations from the mucous membrane clog its tissues, and thus impair the irritability of the extremities of the nerves, or in some way embarrass the yet unexplained action of sapid substances on those

nerves.. But such an explanation or supposition does not carry us far. What really gives rise to the incidental perversion of the sensations in gustation can scarcely be the subject of even plausible conjecture, so long as we know not the entire nature of that excitation which different substances produce in the nerves, so long as we are ignorant how a sweet or bitter taste comes to be generated. That after a sour substance a sweet one tastes doubly sweet we may be disposed to explain by the effect of contrast. This explanation I shall not in general contest, but most earnestly protest against the commonly-received notion that a sweet and a sour taste are opposites of one another. Between two sensations of different quality, whether they belong to the same or different spheres of sense, there exists no *tertium comparationis*, and so nothing which will authorize us to regard them as opposites. It is just as unreasonable to consider a sour taste the opposite of a sweet one, as to attribute opposition to the sensation of a red and green color, or a shrill and a deep tone, as if the one stood in diametric relation to the other, as a north to south pole. Could the two sensations be even assigned to external causes essentially antithetical, we should not be justified in transferring this character to the sensations themselves. These are incapable of all description; they admit not of a measurement or division, and can as little be brought into the relationship of opposition as of numerical value.

I must not pass over this subject without taking at least a brief cognizance of the *aftertaste* or *tang*, although in truth its nature and causes are so obscure as those of the proper sensation of taste. This aftertaste exists in a two-fold manner. With some substances, the original sensation which they create continues of the same unchanged quality for a long time after they have been swallowed and been displaced on the tongue by other substances. With others, again, after the retreat of the sensation originally excited, another supervenes of quite different quality. Thus there are bitter substances whose taste is not to be got rid of, as it is commonly expressed; and, on the other hand, sweet substances which create a bitter aftertaste. When this aftertaste is of like quality with the original sensation, it is not easy to decide whether it is of a purely objective nature, or in part at least, subjective; that is to say, whether the action of the substance which generates the primary sensation itself persists as long as the aftertaste endures, or whether, for some reason, the excitation of the nerves, or the activity of that central apparatus which operates directly on the sensorium and determines the nature of the sensation, continues even after the disappearance of the substance from the nerve extremities. Of the last

there is no existing proof; the objective nature of the aftertaste is, on the other hand, readily conceivable and capable of explanation in different ways. It is very possible that certain substances, having once penetrated into the mucous membrane, cling more pertinaciously than others to its structural tissues, without being removed, by absorption or chemical decomposition, from the vicinity of the nerve extremities, on which therefore, they continue to operate. The probabilities in favor of this origin of the aftertaste are greater, the smaller the quantities of the substance necessary to produce the sensation. In the second place, it may well be supposed that there are substances capable of affecting the nerves of taste through the blood; indeed, it is certain that many "subjective" sensations of taste, which, from time to time present themselves without any external cause, are in reality objective in the sense that substances conveyed from the bowels into the blood have been in such cases carried by the latter to the mucous membrane of the tongue, and thus reach the sensitive extremities of the nerves of taste. The proof of this lies in the often-observed fact that, when intensely bitter substances have been swallowed in the shape of pills so well enveloped that they pass over the tongue without exciting the characteristic taste, that taste will nevertheless arise in the mouth after a certain time. As regards the second sort of aftertaste, where its quality differs from that of the primary taste, we are again left in doubt how far it is objective, how far subjective. It is very possible that certain objects of taste suffer, within the mucous tissues, a rapid change or chemical decomposition, and in this altered condition affect the nerves of taste in a different manner than at first. But it is also conceivable that the different aftertaste results from a spontaneous reaction of the nerve apparatus; a supposition, however, which admits neither of proof nor closer examination.

In like manner with the impressions of touch and smell, those of taste are regularly and unavoidably associated with *ideas* which mankind in general are apt erroneously to identify with the impressions themselves. With the impressions of taste is immediately connected the idea of an external *object* as cause of the sensation, and with so little consciousness of the distinction between the sensation of the idea that we believe ourselves to be directly tasting the object as such, and impute to it qualities of the sensation as a property. Thus every one speaks of sweet and sour substances as if the sweetness or sourness were a property of the substance itself, just as we speak of red or blue objects in the meaning that the color is a property of the object. Most probably we arrive at the idea of an external object as cause of the

sensation of taste—not through this sensation itself, but through the accompanying impressions of touch, which simultaneously enable us to form the idea of the *place* at which the gustatory impression takes place. With sensations of taste are also connected ideas of pleasantness, unpleasantness, nauseousness, etc., which are in like manner erroneously confounded with the sensations. An impression on the organs of sense cannot in itself be pleasant or unpleasant. Further, it is often not the immediate gustatory impression which calls up the idea, for this idea may take its shape from mental associations previously established, or in part from simultaneous sensations of taste or smell.

The above is what I have felt authorized, by the present state of our knowledge respecting the physiology of sense of taste to impart in this small memoir. I might here desist, but it is perhaps, proper to offer a few remarks, in regard to the practical uses to which the sense of taste is adapted, even if the first considerations which present themselves, as was the case when I presented in my "Memoir on the Odoriferous Sense," and therein treated of the sense of smell, may seem calculated to disparage its value as an endorsement of the human or animal economy. In this point of view, it is a matter of indifference whether we ask, of what advantage is the sense of taste, or what was the design in endowing the organism with that sense? The answer to both forms of inquiry rests essentially on the same principles. It is customary to regard the sense in question as a *sentinel*, so to speak, of the digestion, stationed at the portal of the alimentary passages to challenge the various articles which present themselves for admission, and to enable us to discriminate the hurtful from the wholesome. Nor is this view incorrect; only it is necessary, first, to assign the limits within which this sentinel may be trusted; and, secondly, to inquire how far its function is an independent one. It would certainly be disastrous for nutrition and health if we committed ourselves blindly to such a monitor as this; death from inanition or poison must lie everywhere in wait for us if we resigned ourselves without reserve to its indications. The sense of taste is itself indeed no sentinel; the quality of a sensation of taste can, of itself, in nowise disclose to us whether a substance is wholesome or unwholesome; seeing that there are many tasteless substances which are the former, and not a few of the latter which are well-flavored. The sense of taste is in this respect only like the indications furnished by a clock: we must understand the signification of the numbers of the dial-plate and the movement of the hands if we would derive from the clock information as to time; so we must learn, by circuitous experiences, to

interpret the different qualities of the sensations of taste if we would avail ourselves of them in the diagnosis of food and poison.

It is difficult to say how we are determined to the choice of our first nourishment; an impulse wholly enigmatical urges the new-born child to its mother's breast; nor must we imagine that we make any progress towards an explanation when we call this impulse an instinct—that is only a word by which we supply our want of a clear idea. But whatever the nature of the impulse, a sensation of peculiar quality is imparted by the milk of which we are thus led to partake, and this quality, impressed upon the memory, serves us ever after for the recognition of that particular nutriment. And so with all other means of nutrition, whether instinct or experience may have taught us to recognize them as such: the sensations excited by them impress themselves upon us, and with each an idea of the nature of the corresponding object. Thus we learn by the sensation to distinguish the objects, but in nowise do we learn from the sensations the significance of those objects as regards life and death. When we partake of food, the previously instructed sense informs us of the kind and quantity of its sapid ingredients; it is upon our own experience or that of others that we found our judgment of their nutritious or noxious character. Unfortunately for the epicure, the antagonist ideas of pleasant and distasteful can in no manner be brought to conform absolutely with the two categories of food and poison; many a culinary preparation of simplest flavor is an excellent nutriment; many a delicacy which tickles the palate to an exquisite degree is either innutritious or positively hurtful. Finally, it is to be remembered that among the safest viands or the subtlest poisons there are some which are quite insipid, to which, therefore, the vigilance of the sentinel palate can by no possibility extend. These patent truths it is unnecessary to re-enforce by multiplied examples. What would it avail, indeed, to prove that a plain milk porridge as much surpasses a truffle-pastry in nutritious properties as it falls behind it in savoriness? We should make thereby a few proselytes as did the barbarous reformer who once set a whole community in ferment with the words, "Beer is poison."

OTO-MASSAGE.

BY CHEVALIER JACKSON, M.D., PITTSBURGH, PA.

Oto-massage for convenience of consideration may be divided into three general classes of procedures: first, exercise of the *sense* of hearing by means of sounds produced with apparatus or by the voice; second, direct mechanical massage by means of probes or similar instruments brought in contact with the membrana tympani; and, third, massage by means of a column of confined air in contact with the membrana tympani.

The first of these, exercise of the *sense* of hearing, including the methods of Itard and Urbantschitsch, and the various noise producing appliances, have yielded little, if any, temporary, and absolutely no permanent, benefit.

The second class of procedures, by means of direct pressure with probes, etc., operated by hand or mechanism, as advocated by Lucae and others, are so extremely painful, and involve such risk of injury, that it does not seem wise to subject the patient to them for the small amount of benefit obtained by their advocates. Many patients would rather be deaf than suffer the pain. These procedures are also open to the objection that they force the membrana tympani inward, thus favoring retraction, jamming of the stapes, and increased labyrinthine pressure. They also cause extreme vascular turgescence, which cannot be otherwise than aggravating to inflammation, purulent or catarrhal, as the case may be.

The third class of procedures, by means of a column of confined air, is the most generally used and has yielded the best results. This pneumatic massage is practiced by the following methods:

By negative pressure, owing to absorption of air after occlusion of the external auditory meatus with a plug of cotton impregnated with cocoa butter.

By manipulation of the fingers of the patient, either inserted in the meatus or applied to the tragus—methods suggested by Randall and Homell respectively.

By Siegel's speculum operated by mouth, syringe or air bag.

By rubber tube and ear tip operated by mouth, syringe or air bag.
By the Delstanche's masseur.

By a well-constructed mechanical pneumatic masseur acting on the piston principle.

The negative pressure method of Politzer, with a cocoa butter plug, did not prove feasible in the writer's hands.

Massage by the patient with his finger is open to two objections: its action is one of compression, and it is apt to be too frequently applied, resulting in flabbiness and irritation.

The Siegel speculum and the rubber tube operated by the mouth may be too violently applied, but, done properly, it is useful, if care is taken not to blow or compress the column, but first exhaust and then release. The use of the mouth is not very delicate, to say the least, and in purulent cases is out of the question. Operated by the air bag no harm, such as has happened with the syringe, is likely to occur. But none of the procedures have the advantages of a correctly constructed, adjustable mechanical masseur.

The Delstanche, in the writer's opinion, is altogether too violent an instrument as ordinarily used. If applied with vigor, as it usually is, it results in reactionary congestion, which is harmful. If very carefully used, always exhausting, never compressing at the first stroke, it will do no harm, and will be beneficial. But it does not yield as good results as are obtainable with a mechanically-operated adjustable masseur.

A properly-designed mechanical pneumatic masseur is safe, painless and beneficial in a proportion of cases. In the writer's opinion the essentials of a proper design are these: Controllability of the energy and frequency of the stroke; capability of always being started on the exhaust stroke; arrangement of valves so that rarefaction recurs at every stroke and compression is an impossibility. In the one used by the writer there is a ball valve, similar to those on oil pumps. It consists essentially of a bored valve seat, on which fits a ground ball, and over which is a guard regulating the extent of play. Of course there should only be one valve; two would result in a continuous exhausting without releasing. The energy of action is regulated by the stroke of the piston, this being accomplished by placing the crank-pin in one or another of the different holes in the crank disk. These holes vary in distance of their location from the axis. The frequency of the exhaustive impulses is regulated by the speed at which the motor is run. Starting on the exhausting stroke is accomplished by placing the piston at the lowest point of its stroke. High speed in a masseur is unnecessary, and indeed useless. Beyond 960 atmospheric impulses per minute, the separate character is lost and continuous sound is produced. Beyond 150, with a cylinder of proper size, they lose their

distinct exhausting and releasing character, and begin to run together, owing to the elasticity of the air. No wonder a few otologists have failed to get results with pneumatic massage, when investigation showed that they were running a masseur at 3,000 impulses per minute. The impulses ran together, so that no massage was going on at all, unless there was a sound-massage, which is nearly, if not quite, useless. High speed, compression, and violence are responsible for failure to get good results in a fair proportion of all the cases in which it is used.

Now, as to the exact value of oto-massage: there is rigidity of the ossicular chain; *ergo*, passive motion should cure. This seems so logical that the tendency is to expect passive motion to perform miracles in the way of immediate and permanent cure of deafness. A better plan is to set aside all theory and to test the remedy carefully to ascertain its exact value. Four years of careful observation with this object in view has led the writer to the following conclusions:

Benefit has been obtained in about 65 per cent. of the cases of chronic catarrhal otitis media, both hypertrophic and hyperplastic, and in about 50 per cent. of cases of chronic purulent otitis media. The word benefit is meant to include lessening or cure of tinnitus and vertigo, and increase of hearing distance. Purulent and catarrhal inflammatory conditions were carefully treated with means deemed appropriate, as were also naso-pharyngeal troubles where they existed. Means other than pneumatic massage were used conjunctively in cases where they had not already been used with failure to benefit; but the percentage of benefit is very much higher than these means ever yielded alone, and in a fair proportion (about 33 per cent.) where they had failed, pneumatic massage alone yielded very decided benefit.

In a general way it may be stated that pneumatic massage is, without doubt, useless in osseous sclerosis of the stapes, and that it will prove useless in a certain percentage of cases in which it may seem to be indicated. Therefore a certain percentage of failures must be looked for with this, as well as with every other remedy known. It is not a specific. But it offers good chances of benefit in all cases due to defect of the sound-conducting apparatus, whether the result of purulent or catarrhal otitis media, acute or chronic, hypertrophic or hyperplastic. In certain cases it relieves tinnitus and vertigo, and it increases hearing distance. It frequently arrests the onward march of a progressive difficulty of hearing, which arrest is of great service to the patient, even if an absolute cure is not established. It is one of the most efficient means at our disposal for combatting stapelial and other adhesions and jamming inward of the stapes. It is easy to

apply; is harmless, if not beneficial; and is not objected to by the patient, no matter how young or timid. It can be used in conjunction with Politzerization, naso-pharyngeal treatment, and other means of combating disease in these cases, and if it fail, operative procedures are as available as before. In convalescence after acute catarrhal and purulent otitis media the benefit in hastening and assisting restoration of hearing distance is unmistakable.

The only objections that have been raised to pneumatic massage have been on purely theoretical grounds. It is asked: "How can conditions that produce boiler-maker's deafness improve the hearing?" To this the reply is that they cannot. The conditions that produce boiler-maker's deafness are, in the main, painfully intense sounds. Pneumatic massage properly applied is a to-and-fro motion of the air in the meatus too infrequent to produce sound, and never painful in any case. Painfully intense sounds drive the membrana tympani inward, often with sufficient force to rupture it, and in any case to irritate both the sound-transmitting and sound-perceiving apparatus and central auditory tract. Proper massage is an alternate drawing outward, followed by a releasing of the membrana tympani with a movement of the appended ossicular chain.

It is also asked: "How can an increase of circulation benefit a chronic catarrhal otitis media?" To this must be answered that to increase the circulation, as is the usual result with the Delstanche, is to do more harm than good. Massage must be gentle.

Can pneumatic massage do harm? If too frequently or too violently applied it can cause flabbiness of the membrana tympani and increase catarrhal inflammation. The writer has had letters of inquiry from physicians similar to this: "Have you ever ruptured the drum membrane, or had inflammatory ear trouble or hæmorrhage or syncope follow an application?" Methods violent enough to produce such results should be classed as orthopædic surgery, not as pneumatic massage. Unquestionably such methods are harmful, though they may seem mild compared to the removal of the membrana tympani and ossicles. Mutilated drum membranes and great congestion are by no means an infrequent result of the too violent use of the Delstanche, but with a pneumatic masseur properly constructed they are impossible. One patient, in relating his experience with the Delstanche in the hands of a prominent otologist, said: "I thought he would drive my brains out the other ear." This hints at the two great possibilities of harm and obstacles to benefit, namely: violence and compression. To attempt violent massage in cases of osseous sclerosis of the stapes is a common error, resulting in more or less injury to the membrana tympani, without lessening the rigidity of the stapes.

The essentials to be observed in the use of pneumatic massage, in the writer's opinion, are these: First, *gentleness*. Thumping and pounding the membrana tympani, and treating it, though pneumatically, with a degree of energy comparable to that of an orthopaedic surgeon dealing with a fibrous ankylosis of the knee-joint, will do harm, and is very likely to result in injury. This may be in the form of a flabbiness or rupture of the drum membrane, fracture of an ossicle, jamming inward of the stapes, or worsenment of the catarrhal condition owing to increased vasculatity. The second essential is *slowness*. To get the best effect the masseur should not make more than 200 exhausts in a minute, and 150 are enough. The third essential is to always *start on the exhaust stroke*. The action then will be to first draw the membrana tympani outward, and then release it. For this purpose it is well, at every sitting, to make three applications of about 15 seconds each, starting each time on the exhaust stroke. This, with the ball-valve arrangement, will insure against compression. Cases in which there is increased labyrinthian pressure are unfavorably influenced if there is any compression of air in the external auditory meatus. Such compression is precisely the condition of the caisson. Exhausting the air on the first motion counteracts retraction and jamming inwards of the stapes. The fourth essential is *short sittings*, and they should not be oftener than thrice weekly. The fifth essential is that the massage, by whatever means applied, shall *not be put in the hands of the patient*, who is certain to overdo it. The foregoing essentials are responsible, in the writer's opinion, for the good results that he and others have had. They may seem arbitrarily expressed, but they are backed by careful work and observation. This is an operative age. Twenty years hence will see the limitation of operation work to cases where every other means has failed to relieve; and, in conclusion, the writer implores otologists not to subject patients to serious operative measures until after pneumatic massage has been given a thorough trial.

67 Sixth Avenue.

ON THE TRANSFORMATION OF BENIGN LARYNGEAL GROWTHS INTO MALIGNANT NEOPLASMS.

BY NORVAL H. PIERCE.

Professor of Otolaryngology in the Post-Graduate Medical School and Hospital; Laryngologist and Rhinologist to the Michael Reese Hospital; Surgeon to the Dispensary of the Michael Reese Hospital, in the Department for Diseases of the Nose, Throat and Ear; Laryngologist to the Passavant Memorial (Emergency) Hospital, Chicago.

It would seem that Felix Semon had annihilated for all time, by his heroic collective investigation of this subject (*Centralblatt für Laryngologie*, 1888) the belief that benign neoplasms are prone to undergo malignant transformation from operative interference. The ghost, however, does not seem to have been laid, for the February number of the *Centralblatt für Laryngologie*, E. von Nevril, opens the subject again.

Lennox Browne, the high priest of the doctrine, in the article on Malignant Tumors of the Larynx in Burnett's *System of Diseases of the Nose, Throat and Ear*, after naming some eminent authorities who lean towards the possibility of such a conversion taking place, declares: "To this list of more or less willing adherents to the author's conclusions, must now be added the names of Felix Semon and David Newman."

So great was my astonishment at this declaration, that in a letter to Semon I drew his attention to this article. I herewith publish a portion of his reply in order to refute the assertion which, not only places an eminent and earnest worker in an absolutely false position, but may be the means of disseminating among the profession a wrongful conception of a most important subject.

Semon says: "I beg to give the most unqualified denial to the statement made by Mr. Lennox Browne, in Burnett's *System of Diseases of the Ear, Nose and Throat*, to which you refer. Mr. Browne's whole historical argumentation concerning the alleged liability of benign laryngeal growths to undergo malignant transformation after intra-laryngeal operations, is one continued series of misleading statements. On comparing the quotations from the late Sir Morrell McKenzie's alleged examples of such transformations with the originals and with Sir Morrell's own statements in his *Manual of Diseases of the*

Nose and Throat, vol. I, p. 317, you will find that Mr. Browne reports three cases of so-called conversion from McKenzie's practice, whilst that author himself emphatically states that he has seen only one.

"Concerning Newman's case, also reported by Mr. Browne, you will find on comparing Mr. Browne's statements with the original description given in the *British Medical Journal*, that Mr. Browne has in the most essential sentence of a quotation, which he states (l. c.) represents the exact words of the author, simply substituted the word 'demonstrated' for the expression 'believed,' used in the original, and has thereby totally altered the author's sense.

"In Mr. Shattock's and my own case, which he claims to be the strongest case of all (viz.: of conversion), Mr. Browne has suppressed the concluding sentence of the annotation in the *Centralblatt für Laryngologie*, from which he quotes (vol. VIII., p. 318) and in which he expressly stated that this case can in no sense be looked upon as an example of transformation of a benign growth into a malignant one.

"Mr. Shattock and I have brought the sequel of our case on December 19th last before the Pathological Society of London, and have in conclusion of our paper strongly protested against Mr. Browne's misrepresentations. From the *British Journal* of December 23, 1893, pp. 1376 and 1377, you will see that all the speakers in the discussion, with the exception of Mr. Browne himself, have unhesitatingly adopted Mr. Shattock's and my own view, and that in conclusion Mr. Browne has withdrawn his statements as to our case being an instance of transformation.

"Your letter proves to me the necessity of exposing before the American medical profession in an American medical journal Mr. Browne's misstatements, and this I will now do without delay. Meanwhile I trust I have answered your question fully, and you are at liberty to utilize this letter in your forthcoming essay on carcinoma of the larynx."

It would seem to be a fruitless controversy to enter upon, this of transformation of benign into malignant neoplasms. And yet, from a practical and scientific standpoint, the subject in its relation to the larynx is of such special importance that we cannot refrain from touching upon it in this paper.

We claim that any theory which accounts for the origin and course of benign neoplasms cannot be accepted in the same sense as regards malignant neoplasms. The causes of malignant and benign tumors must be essentially different, because the beginning, course, end and nature of each are essentially different.

Our first quarrel is with the terms which are used by the supporters of this transformation theory. They do not use the term "transform," as it is used in speaking of "grubs transforming to beetles," but as did the alchemists in speaking of the "transmutations of metals." We know that carcinoma may grow upon a syphilitic base, just as we have tuberculosis develop upon the same soil, but we never think of either of these as instances of one process being "transformed" into another. Such a position is opposed to all recent pathological thought. Here carcinoma is regarded as autonomous, independent of other organisms (*autos*, self; *nemos*, distribution). From this standpoint the proposition as presented by the supporters of the "transformation" theory is unthinkable.

It is quite easy to comprehend the causes which have led to this error.

1. A highly autonomous epithelial proliferation which distinguishes carcinoma, may develop within the epithelial elements of an organoid tumor. This may occur at a date more or less removed from the inception of the organoid tumor, *i. e.*, soon after or simultaneously with the benign tumor, or years after, as in the case pictured by Thoma in his "Pathology," where a soft medullary carcinoma within a few weeks developed in an adeno-fibroma of the mamma, which had presumably existed for years. But as this occurs in parts, *i. e.*, the mamma, inaccessible to mechanical or chemical irritation, we must conclude that irritation is not a factor *sine qua non* in their development.

2. "A carcinoma may develop primarily as cellular tumor without passing through any organoid stage," thus at the beginning of many carcinomata of the skin, rectum, stomach, the tubules of the glands merely increase in size before they go on to form cancer alveoli. The hyperplastic glandular growth is only the transitory stage of development, which soon gives place to the autonomous cancer growth. (Thoma).

3. *Papillary Carcinoma*.—This form of carcinoma resembles the papilloma in so far as its surface shows papillary elevations, with a stem of vascular connective tissue and an epithelial investment. The difference, microscopically, between the two is that in the papillary carcinoma the epithelial growth passes deeply into the underlying tissues, and extends branching epithelial processes within them, which in structure and arrangement correspond to the medular processes of the adeno-carcinoma.

Now, we can readily believe that unless the *base* of such a tumor when occurring in the larynx is studied, we may be led into error by even our microscopical examination.

Linked to these pathological factors are others dependent on the situation of the tumor, which have been active in the maintenance of the erroneous conception. The interior of the larynx *per via naturalis* is relatively inaccessible. Owing to this, we are able in the majority of cases, especially of large tumors, to procure only small pieces for microscopic examination. Again, intra-laryngeal operating is not always simple, even to the most dexterous operator. So much of success depends on circumstances which are apart from the operator: the intelligence and self-control of the patient, the shape of the larynx, the situation of the tumor within the larynx, etc.

To recapitulate then:

1st. It is probable that we may have a carcinomatous focus develop in a benign neoplasm, occurring in any part of the body, but there is no proof that this occurs with unusual frequency in the larynx, nor are we to regard this in any case as an instance of transformation.

2nd. In certain carcinomata, their first appearance is characterized by a hyperplastic glandular growth, and if a carcinoma at this transitory stage be subjected to microscopic examination the results could only be of negative value. And here let me make a quotation from Gerhardt's late work on "Kehlkopfgeschwuelste:" "Probeexcision und microscopischer Befund sind in dieser Frage mit dem Stichworte pathognomonisch oder typisch in Verbindung gebracht worden, als ob man gleichmässiges Durchdenken und Abwägen aller Krankheitszeichen durch schablonenmässige Fabrikarbeit mit Hilfe Anderer ersetzen könnte."

3rd. The microscopic examination of the surface of the tumors in a relatively large number of cases will lead us to erroneous conclusions, because it is only in the body or even base of such tumors that the typical formation exists. These facts taken in conjunction with the peculiar situation of the growth has led, in our opinion, to the erroneous belief that benign laryngeal neoplasms are prone to malignant change.

CLINICAL REPORTS.

THROMBOSIS OF THE LATERAL SINUS.

BY N. L. WILSON, M.D., ELIZABETH, N. J.

Attending Rhinologist and Laryngologist to the Elizabeth General Hospital and Dispensary;
Vice-President Clinical Society of same, etc., etc.

I desire to report a case of thrombosis of the lateral sinus, not because of its infrequency, but with the hope that it may shed a little more light on this class of cases, and encourage others to operate early.

Robbie, age 15; gave history of having a suppurating otitis media for three years. On labor day he went in swimming in a fresh water lake. The next day he complained of lassitude and some pain in ear, which continued to grow worse for a week, at the end of which time he called in a physician, who promptly diagnosed mastoiditis; but, owing to the unreasonableness of the parents, was not able to operate. He was admitted to my service in the Elizabeth General Hospital September 21st, with all the signs and symptoms of mastoiditis, although he was not complaining of as much pain as he had done previously. I opened the mastoid, and, after chiseling away the outer surface of the bone, came upon a small quantity of pus. The antrum was filled up with granulations, which were removed, and a stream of sterilized water was freely passed through it, escaping from the external canal. We had some difficulty in keeping it open, as masses of granulation tissue would form in the antrum and occlude it. This, however, was finally overcome; but the patient's temperature would suddenly rise to 106, and then as suddenly decline. He had no distinct chill, and his pulse was of good volume and about 130 per minute. These symptoms usually came on at night or early morning, and I found myself confronted with what my colleague and myself took to be a thrombus of the lateral sinus. I determined to open the sinus, and accordingly removed a button of bone over the sinus, and as I did so there welled up a quantity of pus from between the dura and the skull. The sinus had a slight pulsation, but a hypodermic needle introduced into it brought forth only a few drops of blood. I was satisfied with the pus already found, and endeavored to drain it. This operation

did not relieve the boy, and it was apparent that he was in a very critical condition, and by the advice of some of the gentlemen present, I again had the boy etherized, and removed a button of bone from the posterior fossa, hoping to drain the epidural abscess. No pus was found in this situation, and this time I opened the sinus, and then found the thrombus, which was lodged a little above the margin of my opening. The sinus did not bleed until I disturbed the thrombus, when it bled freely. It was packed with iodoform gauze, and gave no further trouble. Two days after the operation he began to have a slight paralysis of arm and leg of same side, with slight difficulty in swallowing.

This increased until death, which occurred on the 4th day after the last operation. The diseased ear was the right one, and paralysis coming on the right side, and the patient having no vomiting at any time, somewhat mystified me; but at the autopsy there was found an abscess in the left temporo-sphenoidal lobe, about the size of a peach pit. A very large thrombus was found in the sinus, and the mastoid was carious, although there was no opening into the cranial cavity. If it ever falls to my lot to see a similar case, I will not hesitate to open the sinus and clean it out.

EPILEPSY RELIEVED BY INTRA-NASAL TREATMENT.*

BY T. PASSMORE BERENS, M.D., NEW YORK CITY.

Mr. F., age 39; married; consulted me January 6th, 1895, for sub-acute catarrhal otitis. His family history was good, but he had suffered since infancy with epilepsy. The attacks came on during the night; sometimes four or five during a single night. Again he would have only four or five in a month. At times the attacks were slight; but as a rule they were accompanied by complete unconsciousness, biting of the tongue, etc., etc., and lasted from a half hour to two hours. Having consulted me for his ear, I paid no attention to the epilepsy. In his nose was a not very large septal ecchondroma and exostosis in contact with the anterior end of the right inferior turbinate, and posteriorly with the middle turbinate. This septal growth I removed, as it interfered with the treatment of his ears. This was on February 10th, 1895. After this he did not have a convulsion until August 2nd, 1895, when he took a severe cold in the head. I did not see him then, but he told me later that at the time

* Read before the Section on Laryngology and Rhinology, New York Academy of Medicine, Nov. 25, 1896.

his right nostril was occluded, and he had considerable supra-orbital neuralgia on that side. From August 2nd he went until November 9th, when he had a mild attack, due, he claims, to another cold. I saw him shortly after this, and found a much-congested lower turbinate on the right side, which I cauterized November 9th, 1895. To date, November 25th, 1896, he has not had an attack.

The patient cannot remember ever having had any premonitory symptoms of the attacks. No suggestion was made that the operation on his nose might benefit his seizures, and no constitutional treatment was taken by him.

4 E. Forty-third Street.

CLINICAL NOTES: NASAL AND AURAL.

BY F. B. EATON, M.D., SAN JOSE, CAL.

A Tooth in the External Auditory Canal.—Some weeks ago, as I was leaving the building in which is my office, I was met at the door by a laboring man leading by the hand a small boy about seven years of age. The latter was staggering, and now and then vomiting. The father handed me a note from a city physician stating that he and a confrère had tried to remove a tooth which the boy had put into his left auditory canal, but without success, and referred the case to me as they had not the necessary instruments. The father stated that no syringe had been used, only instruments.

On examination there was a little blood trickling from the meatus, and some clotted blood in the canal. I syringed the canal to remove the blood, and hoping to so remove the tooth, but without success, as even gentle syringing caused intense nausea and vertigo. The tooth was visible, lying on the floor of the canal and against the membrane, its long axis transverse. Probing showed it to be impacted, the sharp alveolar-end penetrating the posterior wall. Owing to its smooth and rounded surface, forceps were useless, so I made a curette of a soft metal probe by turning over its end so as to give a radius suitable to the size of the tooth and crooking it like a shepherd's crook. Then with a Gross' foreign-body hook I, with some difficulty, started the tooth outward as far as the middle of the canal, and managed then to pass the larger, extemporized hook over and around it, and thus extracted what proved to be a canine tooth.

Though many and various are the foreign bodies found in children's ears, I have related the above mainly to point out once more a hoary and venerable moral for the general practitioner. Again and again

have aural surgeons repeated the caution: *First use the syringe whenever the foreign body is one that does not absorb water.* The use of forceps in the vain endeavor to remove round, smooth bodies has also been deprecated, and the necessity of good forehead-mirror illumination emphasized. In few surgical cases is the expectant treatment on the part of inexperienced surgeons so *apropos* as in these; and to judge by the results of ill-advised interference, the question of a certain famous judge might often appropriately be put to unwise and eager operators: "Could not you have left it alone?"

A Method of Introducing Melted Vaseline into the Naso-Pharynx.

The spraying of melted vaseline into the naso-pharynx is often difficult, and sometimes even impossible in adults, and more often so in the case of small children. The following method has succeeded well in my hands, especially with very small children.

An ordinary eye pipette is nicked with a file and broken off just below the point where it begins to contract. The sharp edges are then rounded in a Bunsen or spirit-lamp flame. To use it the child, for instance, lies on its back with its head hanging over the edge of a bed, table or its nurse's lap, so that the line of the face is vertical. About a teaspoonful of the vaseline is then melted in a table-spoon by holding it over the chimney of an ordinary reading lamp. The rubber of the pipette is then pinched, and as much as possible of the vaseline drawn up into the pipette; then the end is inserted into one nostril, the other being closed by the finger, and at the moment the rubber is forcibly pinched, the patient is urged to "shut the mouth and breath in quick and hard." In the dependent position of the head, the vaseline on reaching the naso-pharynx falls upon its roof, and indeed reaches the pharynx. This is repeated with the other nostril.

Y. M. C. A. Building, Dec., 1896.

CORRESPONDENCE.

To the LARYNGOSCOPE:

The LARYNGOSCOPE will please pardon me for writing a second time in regard to the practicability of Dr. Black's motor saw.

Having read Dr. Black's reply to my letter through the LARYNGOSCOPE, I then decided to write this letter acknowledging my mistake as to the setting of the teeth of Dr. Bosworth's saw. All the saws I used before I had one made according to my own idea were called "The Bosworth Saw," and the teeth were set forward. I had not the good fortune of reading Dr. Bosworth's original paper in which his saw was first described until he so kindly sent it to me a few weeks ago.

Dr. Black was in my office also a few weeks ago and showed me his motor saw.

To be consistent with my idea of removing all resistance to the forward movement of the saw, I consider the Bosworth saw as it is described by Dr. Bosworth and Dr. Black a compromise between the forward resistance of the teeth setting forward and the backward resistance of the teeth setting backward. This saw with equal resistance forward and backward may be practicable on account partly of the short stroke made by the motor, but I still believe that when any resistance to the forward movements exists there is danger of the saw first bending, then hanging and probably breaking. The less resistance to the forward movement the less apt we are to have the above accident.

Yours sincerely,

S. M. PAYNE.

Nov. 30th, 1896.

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EDITORIAL.

EUCAINE HYDROCHLORATE IN NASAL OPERATIONS.

Eucaine hydrochlorate is a new alkaloid which is obtained by synthesis, and is recommended as a substitute for cocaine. The manufacturers claim that it is a perfect substitute for cocaine, which does not affect the heart, is permanent in solution, and is less expensive. Although recently presented to the profession, a number of writers have given their views and made their reports, and are almost universally in favor of this new alkaloid.

In its application for operations of the nose and throat a recent writer, Dr. Hal Foster (*Langsdale's Lancet*, August, 1896), has writ-

ten favorably upon eucaine hydrochlorate, and claims that it can be used in all cases where cocaine is indicated, and that it is a safe and useful drug in nose and throat work. I have used eucaine hydrochlorate in my practice for several months, and while it appears as useful in the naso-pharynx and larynx as cocaine, I have not found this to be the case in nasal operations.

Cocaine in the nasal passages has not only the effect of anæsthetizing the mucous membrane to which it is applied, but it has another effect, and one which is of secondary importance only to its anæsthetizing effect in this region. This is its ischemic action—the depletion and collapse of tissues which enables the operator to inspect the parts fully, and thus to perform operations to the greatest advantage, and without great liability to injure the opposite parts of the nostril. When it was applied to the tonsils, the larynx or in the naso-pharynx, it has given me satisfactory results, but in preliminary rhinoscopic examinations, and in operations for removing polypi, catheterizing the antrum of Highmore, or other accessory cavities, removing posterior hypertrophies of the turbinates, curetting ethmoidal cells, and in applying the galvano-cautery for hyperplastic conditions, I have rarely been able to complete these operations without the use of cocaine. Where the nostril is to be anæsthetized for the passage of the Eustachian catheter, as is sometimes necessary, a weak solution of cocaine is also preferable.

One of the advantages of cocaine in rhinologic operations is its hemostatic effect, due to the contraction of the tissues. With eucaine not only is this contraction absent, but even the opposite effect takes place, viz.: congestion of the tissues; and a case has been reported recently in which considerable hemorrhage followed catheterization of the bladder, which was ascribed to the congesting effect of this anæsthetic on the mucous membrane. In operations in which cutting instruments are used, as in removing septal spurs, this would be another disadvantage in the use of eucaine hydrochlorate.

The cases in which I have found eucaine hydrochlorate of service in rhinological work is in the application of electrolysis for the relief of hypertrophic rhinitis. In this operation it is of advantage to avoid the collapse of the tissues, which interferes with the proper insertion of the needles, and as in eucaine hydrochlorate this is avoided, I have used it to advantage in such cases.

In regard to its rapidity of action, I have not found the time required shorter than in the application of cocaine in those cases in which I have used it. On the other hand, eucaine hydrochlorate possesses the advantage of being stable in solution, although I have

never found any objection to the addition of a small amount of carbolic acid to the cocaine solution to prevent decomposition. In fact, the addition of this antiseptic, it is proved, not only increases its anæsthetic property, but also inhibits to some extent the toxic effect of the cocaine.

It is claimed that the systemic effects of eucaine hydrochlorate are much less than those of cocaine. This should not, however, prevent physicians from being extremely cautious in the use of this new alkaloid. Where cocaine is judiciously applied, evil results rarely follow, and in a very extensive use of this drug I do not recall a single serious effect, or more than passing inconvenience. A small amount of whisky is usually sufficient to correct the weakness which sometimes effects the patient, and a prophylactic dose of this stimulant is useful. In those cases in which fatal results have been reported from cocaine, they were due either to a reckless application of the anæsthetic or to the idiosyncrasy of the patient. When the enormous extent to which cocaine has been used is considered, the small number of fatalities is almost striking.

When, however, it is a question of idiosyncrasy, this may also be present when the new alkaloid is used, and when eucaine will be employed to any extent commensurate with cocaine, we may also expect to hear untoward results. Especially will this be the case if the writers insist, from a comparatively short experience with this alkaloid, on its harmless systemic effect. We should use it in such cases in which it is indicated, but always with extreme caution, otherwise we may learn to our sorrow that results may develop from the use of eucaine hydrochlorate which we were not led to expect from the limited experience which we have had with this new drug. W. S.

THE LARYNGOSCOPE NECESSARY TO THE GENERAL PRACTITIONER.

Although established but six months, THE LARYNGOSCOPE has become a necessity to the well-posted general practitioner. This is evident from the daily list of new subscribers we have received for several months; and now comes our worthy confrere, *The Medical Fortnightly*, which publishes a list of ten medical journals necessary to the general practitioner, confirming this assertion. This list, made by an old practitioner, of course includes THE LARYNGOSCOPE. No one engaged in the practice of medicine can keep abreast of the rapid advance made in this branch of his profession without it.

CONTRIBUTIONS TO THE FEBRUARY ISSUE.

The February issue of **THE LARYNGOSCOPE** will contain the following list of original articles, besides editorials and the usual condensation of the principal articles from current literature:

Dr. Gottlieb Kicer, Copenhagen, Denmark: "Hæmatoma of the Nasal Septum."

Dr. J. C. Mulhall, St. Louis: "The Purulent Nasal Catarrh of Adolescents."

Dr. H. J. Mulford, Buffalo: "The Value of Urinary Examinations to the Laryngologist."

Dr. Edwin Pynchon, Chicago: "Instruments Used in Tonsillotomy by Electro-Cautery Dissection."

Dr. Robert Barclay, St. Louis: "Can You Cure Deafness Caused by Catarrh?"

Dr. F. S. Milbury, Brooklyn: "The Relation of the Affections of the Upper Air Passages to Diseases of the Ear."

SOCIETY PROCEEDINGS.

SECOND PAN-AMERICAN CONGRESS—SECTION ON RHINOLOGY, LARYNGOLOGY AND OTOTOLOGY.

In the Second Pan-American Medical Congress, held in the City of Mexico, November 16th and 19th, the Sections of Ophthalmology, Otology, Rhinology and Laryngology held a joint session. These sections were but moderately represented, thus accounting for the brevity of the reported proceedings.

RESUME OF PAPERS.

Researches into the Technique of Laryngeal Operations, with Report of Four Successful Total Extirpations. George W. Crile, of Cleveland.

The author commenced his paper by calling attention to the close relationship existing between the larynx and both the lungs and heart, and the marked influence it possessed in many cases over both these organs. He stated that sometimes even slight contact with the mucous membrane of or about the region of the vocal chords produces partial and in many instances complete cessation of respiration; pressure or dragging on the larynx causes, in addition, a considerable, sometimes very great, slowing of the heart-beat and corresponding fall in blood-pressure, sometimes amounting to almost zero; section of the inferior laryngeal nerve has no effect on this phenomena, while section of the superior laryngeal results in abolishing it. The administration of atropia in physiologic doses abolishes the heart phenomena, but does not prevent the respiratory alterations. Cocaine hypodermatically guards the heart, but not the respiration; while if applied locally it prevents both the respiratory and circulatory phenomena.

These conclusions have been reached after experimentation on twenty dogs while under complete ether narcosis, and it is therefore assumed that the phenomena are due to reflex action caused by mechanical irritation of the peripheral terminals of the superior laryngeal nerves, and that cocaine applied locally paralyzes the same, even under complete anesthesia. The local application of this drug therefore suggests itself in certain laryngeal operations.

Malignant disease of the larynx was extensively discussed, and the

author emphasized the claim that carcinoma probably cannot penetrate cartilage, and that its most frequent point of attack is in the region of the vocal chord, and thus early symptoms are produced. When suspected, a specimen should be secured and submitted to a competent pathologist, and if proven to be cancer an early and radical operation should be performed, as the author can see no reason why these operations, if done early, should not be extremely promising.

Even in neglected cases, usually foul and ulcerating, suffering from septic broncho-pneumonia, caused by the discharges or by the entrance of food, and where intense pain is present, an early and radical operation should be done; for, while it may not cure, it will give the sufferer a respite and prove to be merciful and humane. The strongest testimony on this point is from the patients themselves.

The essayist urged a technique that would guard the pulmonary tract, and lessen the time of operation to a minimum.

The four cases reported made good recoveries.

The Treatment of Whooping-Cough by Means of Asaprol. Dr. Moncorvo, of Rio de Janeiro, Brazil.

The author claimed that bichloride of mercury, resorcin, citric acid, and naphthol are the only agents with which the development of the microbe of pertussis can be arrested. The first-mentioned is discarded on account of the danger attending its use, while the last-mentioned is too insoluble. Resorcin and citric acid have both been extensively and successfully used by local application to the glottis, but the author has found asaprol to be the most satisfactory remedy in combatting whooping-cough.

Symptoms of Speech Disturbances as Aids to Cerebral Localization. Dr. J. T. Eskridge, of Denver, Colorado.

He tabulated the principal disturbances due to lesions as follows:

1. Anorthographia is due to lesion at foot of left second frontal convolution in right-handed persons.
2. Oro-lingual paralysis occurs from lesion at extreme lower portion of central convolution.
3. Brocha's aphasia from lesion at foot of third frontal convolution.
4. Auditory disturbances of speech are caused by a lesion in the posterior portions of the first and second temporal convolutions.
5. Visual disturbances of speech result from lesions in or near the angular gyrus.

The various forms of apraxia are difficult to locate, but generally point to a lesion located at a point posterior to the Rolandic region.

SELECTIONS FROM CURRENT MEDICAL PUBLICATIONS.

RHINOLOGICAL.

Asepsis of the Nasal Cavities.

After an elaborate review of St. Clair Thomson's, Wurtz's, and Lermoyez's papers, Piaget (*Journal of Laryngology*) relates the numerous experiments which he has conducted for the study of bacteria of the nose. In the normal state the nasal cavities are free from microbes, except the anterior part and vestibule. The culture of nasal mucus collected in the remote parts is sterile; the nasal cavities are normally aseptic. That asepsis is the result of the structure of the canal, of the ciliated epithelium, and especially of the bactericidal properties of the nasal mucus. That bactericidal action is absolute for carbuncle bacteria, very marked for Loeffler's bacillus, and less marked for staphylococcus and streptococcus. This asepsis explains to a certain degree the immunity of nasal operations.

Klemperer, of Strasburg, does not agree with the authors named, but maintains that in healthy noses, while it is true that bacteria are to be found in quantity only in the vestibule, still no part of the nose is germ-free. Let the anterior parts of the nose be thoroughly sterilized with perchloride of mercury and washed out with sterilized water; then wipe out the parts higher and deeper in with sterilized cotton-wool swabs. These (the swabs) always bring away a few germs, from which two, three, four, or more, frequently six, eight, ten colonies can be cultivated.

Klemperer cannot confirm the statements of Wurtz and Lermoyez as to the bactericidal properties of nasal mucus. Unlike these authors, he experimented not with anthrax bacillus, but with the bacteria which he had previously cultivated from the nose whose mucus he was testing. At first they did not grow well, and even diminished to some extent in number, but soon grew accustomed to the mucus and multiplied in it. Extinction was never observed.—*Universal Medical Journal*, Nov., 1896.

S. S. B.

Epistaxis and Cardiac Disease.

Dr. Koplik presented a girl of about 7 years, who at about the age of 2 years began to have attacks resembling rheumatism, with fever and pain in the joints. These attacks recurred nearly every year. Later she began to have attacks of very persistent nasal hæmorrhage, recurring at intervals of a week, a month, or several months. The last hæmorrhage threatened life, and left her nearly exsanguinated, but finally ceased of its own accord. The child was still anæmic. Examination of the heart showed double mitral lesion and dilatation of the left ventricle, and possibly also of the right.—*Universal Medical Journal*, Nov., 1896. S. S. B.

Hæmorrhage From the Nose.

J. E. Brennan reports a case of serious hæmorrhage from the nose (*Louisville Med. Month.*) in a seventy-three-year-old patient. Ice, salt, and other household remedies, were used without avail. Tamponnage of both nostrils, recumbent position, and Monsell's solution in teaspoonful doses internally, did not check the hæmorrhage. Finally, one-half grain doses of ergotine were administered hypodermatically every fifteen minutes, new tampons also being inserted into the nose. After the fourth injection of ergotine the hæmorrhage ceased entirely. Plugs were removed three days later; there was no recurrence of the hæmorrhage. The exact point of bleeding was not ascertained.

Intra-Nasal Medication and Antisepsis.

St. Clair Thomson concludes an able article on this subject as follows: 1st. The interior of the nasal cavity being practically aseptic, it is quite uncalled for to try and make it more so. 2nd. The presence of a foreign body in the nose tends to produce a watery mucous flux, and consequently weakens the lining membrane. The vibrating cilia expel rapidly all fine solid particles coming into contact with them. 3rd. To extract purulent collections, it is better to employ non-irritant alkaline liquids than strong antiseptic solutions. 4th. It is important to disinfect the instruments and the fingers when introduced into the nasal cavities or naso-pharynx.—*Canada Med. Jour.*

To Overcome the Catarrh Following the Administration of Iodide of Potassium.

Dr. Cohen (*Lancet*) advises that in cases in which there is coryza from the use of iodide of potash, tincture of belladonna be used, five minims being added to each dose of the potash.

Treatment of Hay Fever.

In *The Medical Progress* for December, 1896, Dr. J. A. S. McCassy adopts the uric acid theory and treatment of hay fever proposed by one of the editors of the *LARYNGOSCOPE* at the Milwaukee meeting of the American Medical Association in 1893. Beside constitutional treatment and reduction of hypertrophies, "the exacerbation of the hay fever was treated by the local application of a 5-per-cent. solution of cocaine to the nasal mucous membrane, but this was only of temporary benefit; the effects of an application would wear off in from one to three hours. Fifteen to twenty-drop doses of dilute nitro-muriatic acid, or half-drachm doses of dilute phosphoric acid, administered three times daily, proved of signal utility in abridging the attacks. But one-eighth of a grain of sulphate of morphine, with a ninetieth of a grain of the sulphate of atropia, administered by the mouth every one to four hours, proved the most effectual treatment."

The dose of atropine Dr. McCassy mentioned is larger than is necessary, especially when it is to be repeated "every one to four hours." Such a use of atropia will not only produce excessive dryness of the fauces, but hoarseness and the eye symptoms characteristic of atropinism. Although the combination of morphia and atropia gives certain and prompt relief, the doses of atropia should not be larger than that mentioned in the July number of the *LARYNGOSCOPE*, page 27. The formula given there is as follows:

R Morphiæ sulphatis	gr. $\frac{1}{12}$
Atropiæ sulphatis.....	gr. $\frac{1}{1000}$
Cafeinæ citratis	gr. $\frac{1}{6}$

S. S. B.

Treatment of Obliteration of the Nasal Orifice of the Lachrymal Duct.

H. Alland, in discussing this subject (*Upsala läkareförenings förhandlingar*) states that the diagnosis of obliteration of the duct is best made by flushing the canal with some liquid, when, if a valve or obstruction is present, the liquid will not pass through the canal. If a probe passed in at the ocular end of the canal can be touched from the nasal side, the presence of a valve is unlikely. A diagnosis should not be based on a single examination, as the obstacle may be of only temporary duration. If found to be permanent, it may be treated by means of an incision through the median wall of the naso-lachrymal duct, toward the inferior nasal meatus, the duct being cut by means of a scalpel introduced through the nostril. The author has also invented an instrument for the purpose, from which he has had good results, the inferior orifice of the duct remaining open two months after the operation.—*Universal Med. Jour.* S. S. B.

Ulceration of the Nasal Septum.

Dr. T. C. Christy (*N. Y. Med. Jour.*, Jan. 2, 1897) presents a series of cases in which the lesion, with loss of substance, was chiefly located on the mucous membrane of the septum nasi.

"Such lesions ordinarily are not encountered in the early stages of their development; consequently their definite causal relations and the pathological significance are the factors lacking."

He summarizes the etiology of the series of cases treated as follows:

SUBJECTIVE SYMPTOMS.

- (a) Taking cold.
- (b) Obstruction of one or both nostrils to free respiration.
- (c) Pain over the superior nasal and frontal region corresponding to the obstructed naris.
- (d) Generally, abolition of the sense of smell.
- (e) Occasionally, pain in the eyes, or disturbance of vision.
- (f) Pain in one or both ears.

OBJECTIVE SYMPTOMS.

- (a) Nasal intonation.
- (b) Externally, signs of acute inflammatory reaction extending over the obstructed naris; or, in the more chronic forms, the nose of a bluish cast, or the skin thickened, dry and scaly.
- (c) The difficulty, often extending to an impossibility of inspecting the part, owing to the infiltration of tissues.
- (d) The ineffectual influence of solution of cocaine for inspection purposes.
- (e) The pale, sodden or macerated condition of the tissues involved.
- (f) Pain on swallowing.
- (g) The nature and appearance of the nasal discharge—a clear, glairy slime.
- (h) Tendency to frequent hæmorrhage.
- (i) The marked physical depression of the patient.

The Accessory Nasal Cavity in Diphtheria, Measles and Scarlatina.

Bacteriological examinations of the accessory cavities of the nose were made in twenty-two cases of diphtheria (M. Wolff, *Medicine*, September, 1896). In all there were disease changes in the antrum of Highmore. In seven cases only slight changes were observed, there being mucous and muco-purulent secretion without inflammatory changes in the mucous membrane itself. In the remaining fifteen cases there were more marked changes, the mucous membrane being in a

condition of inflammatory edema, with hæmorrhages in places. The diphtheria bacillus was confined to the cases with marked changes, and was absent in three out of the fifteen. In these three the diplococcus lanceolatus was present twice, and the streptococcus pyogenes with the staphylococcus pyogenes aureus in one. The diphtheria bacilli were found alone in two cases only; twice they were associated with the diplococcus lanceolatus, once with the streptococcus, once with both of these, twice with the staphylococcus pyogenes aureus, three times with the streptococcus and the staphylococcus pyogenes aureus.

The sphenoidal sinuses were not developed in fifteen cases. In the other seven cases there were more or less inflammatory change. In six of these the diphtheria bacillus was present, three times alone.

The frontal sinus, in the only case in which it was examined, was the seat of severe edematous swelling, and contained the diphtheria bacillus and the staphylococcus pyogenes aureus.

The tympanic cavity was sterile in seven cases. In the other fifteen diphtheria bacilli were found six times, once only alone; in the others associated with other bacteria.

The age of the subject did not influence the severity of the disease in the accessory cavity.

Five cases of measles and two cases of scarlatina were also examined. Various bacteria were found, including the diplococcus lanceolatus, streptococci, staphylococci, and the bacillus pyocyanus. Severe inflammatory changes were found like those in the cases of diphtheria.

W. S.

Bacteriological Researches upon Caseous Rhinitis.

Guarnaccia (*Archivii Italiani di Laringologia*, No. 4, 1896) has made bacteriological researches upon caseous rhinitis. These studies refer to a case observed by Massei in his clinic. Guarnaccia has demonstrated that the micro-organism found in rhinitis caseosa, which was so differently understood by Perier, Sabrazès, etc., is the streptothrix alba, or Foersterii, studied by Rossi-Doria, Cohn, and Gasperini. The author was able to cultivate it in agar, gelatin, bouillon, blood-serum, potatoes, and milk. Inoculations in animals were not successful. It is perfectly correct, in his opinion, to assume that the considerable amount of caseous matter is formed by the growth of the streptothrix, as is the case in muguet.—*Universal Medical Journal*, Nov., 1896.

S. S. B.

Epithelioma of the Nares, Pharynx and Antrum.

Mr. G. A. Syme (*Intercolonial Med. Journal of Australasia*): At a meeting of the Medical Society of Victoria, a patient was exhibited upon whom an operation was performed for the above disease. Five years previous a mucous polypus had been removed from the right nasal cavity. At his reappearance his right nasal chamber and nasopharynx were found completely filled with a cauliflower-like growth. The right cheek was swollen. After a preliminary laryngotomy, the upper jaw was removed and the growth, which also filled the antrum, was excised. The patient now wears an obturator. The microscope showed the tumor to be an epithelioma.

At the same meeting Mr. Chas. Ryan demonstrated a case of excision of the upper jaw for a large mixed-celled sarcoma. The growth probably started in the antrum. The left side of the face was prominent, and there was proptosis of the left eye. The external carotid artery was tied before the excision. A dental splint is worn by the patient, and is very serviceable.

M. D. L.

Endothelioma of the Nose.

Dr. F. Acerbi presents an histological study of a tumor spontaneously expelled by a woman twenty years old, suffering from the so-called rhinitis caseosa, in Professor Massei's clinic (*Archiv. Ital. de Laryng.*). The growth was decided to be an endothelioma, benign in nature, and but rarely observed, especially in the nose. The author states that it is the first of the kind recorded, after Dansac's case, though differing from the latter, which originated in the septum and endothelium of the blood-vessels, while in his own case it took its origin from the turbinate and lymphatic lacunæ.—*Universal Med. Jour.*

S. S. B.

Exostosis of Frontal Sinus.

This growth was removed from a female, 46 years old (Mr. Thilerall Thomas, *The Lancet*). It was present thirteen years, and was supposed to be the result of a blow. The patient suffered from severe frontal neuralgia. A small portion of the tumor protruded into the orbit. An incision was made well under the eyebrow; the orbital portion was grasped with a strong forceps, and a few taps of the chisel loosened its attachment to the bone. The floor of the sinus was also cut away. Dura mater formed the roof of the sinus. Drainage was carried out through the nose. The growth was an ivory exostosis, and weighed over half an ounce. Good results followed its removal.

M. D. L.

Turbinotomy in Nasal Stenosis.—An Analysis of Sixty-six Cases.

It will be remembered that Mr. Carmalt Jones, of the Central London Throat, Nose, and Ear Hospital, has for some time advocated the free and thorough removal of hypertrophied inferior turbinated bodies by means of an instrument called the "spoke-shave," which he devised for the purpose. He proposes this operation as a substitute for, and more thorough removal than, the usual method of electro-cauterization. It has not been generally adopted, for the reason that it is feared, in the first place, that too large an opening may be made, and subsequent dryness with incrustation of the nose and pharynx result; and, in the second place, the operation cannot be wholly free from serious danger of hæmorrhage. It is therefore interesting to note the analysis which Dr. Abercrombie, of Glasgow (*Journal of Laryngology, Rhinology, and Otology*, October, 1896) makes of Dr. Jones's cases. Out of the sixty-six cases relief was afforded by the operation in sixty-two—that is, in almost 94 per cent. of the cases the operation was successful in a greater or less degree. Of the sixty-two successful cases the relief afforded by the operation was very marked in twenty-one instances, and especially so in four of these. In fourteen cases decided improvement followed the operation, and in twenty-seven patients the operation gave slight relief only. The large majority of patients were young adults, although one was seventy-one and another but six years of age. Turbinotomy alone was performed in most of the cases, but in a few enlarged tonsils were removed, or adenoids scraped, in addition. Nitrous oxide gas was administered to five, being found quite effective, answering for the few seconds required for the operation. In half of the remaining cases a 10-per-cent. solution of cocaine was applied locally by cotton plugs, but in spite of this, pain was felt in every case. In the other half, no anæsthetic, local or general, was given, most of the patients describing the operation as being very painful, but a few not seeming to regard it as painful. The bleeding in every case was profuse, but in no case was it alarming at the time of the operation, although more or less bleeding occurred from the nose for several days afterwards in many of the cases, and in one man a secondary hæmorrhage occurred, which was so serious as to necessitate his admittance to the hospital. Most of the patients returned to their homes on the day of the operation. Only one patient fainted after the operation. After-headache, more or less severe and chiefly frontal, was present in most of the cases, and slight swelling about the nose and eyes was not uncommon for a few days. In no case, so far as could be judged from the patient's letters, has atrophic rhinitis resulted, although in two the condition of

pharyngitis sicca is now observed; it is not certain, however, that this is the result of the operation. No external nasal deformity has resulted; rather the reverse. The nostrils being stimulated by the passage of air through them, become more active, the nose becoming larger instead of being a small and useless organ. Reproduction to a greater or less extent of the mucous membrane occurred; in fact, in some of the cases it has been necessary to operate a second time, or to use the cautery, so great was the reproduction of tissue.—*Medicine.*

S. S. B.

Classification of Asthma.

There have been numerous classifications of asthma (Saunders, in *Canadian Practitioner*), but it appears to me that they can all be included under three heads, according to the apparent provoking cause, viz.: 1. Irritation of the terminal filaments of the vagus nerve, either in the respiratory passages, particularly the nasal, or in the digestive tract, the stomach probably chiefly. 2. Irritation of the main trunk of the nerve itself. 3. Irritation of its origin in the brain. Of these three causes, the first two are decidedly the most common, and are frequently combined, as is illustrated by some of the cases I have recorded. The last, or purely nervous form, in which the paroxysm occurs independently of any local irritation, is probably rare, and I am inclined to believe will be found to be more uncommon the more thoroughly we are able to investigate the conditions in each of our patients under which an attack occurs.

S. S. B.

LARYNGOLOGICAL.

The Diphtheria Question.

Prof. Carl Fraenkel, the eminent bacteriologist (*Berl. Klin. Woch.*, No. 36), in his thesis for the diphtheria discussion at the next meeting of the German Public Health Association, gives a comprehensive resumé of the present status of the question:

1. The cause of diphtheria in its true sense is the bacillus discovered by Löffler. The germ is to be found (*a*) regularly in the diseased portions (skin and mucous membranes); (*b*) often in the patient's vicinity; (*c*) rarely in the mucous membrane of healthy individuals.
2. Infection is carried (*a*) immediately to the healthy by the sick (coughing on a second person, kissing, etc.); (*b*) mediately, by objects to which the specific germs adhere (beds, linen and clothes, toys, dishes, food, etc.).

3. The development of the infection depends altogether on a special disposition, as is proved by the presence of diphtheritic bacilli in healthy organisms.

The struggle against diphtheria must therefore be directed to:

First—Destroying the bacilli: (*A*) in the sick, by (*a*) quickly curing, and shortening the course of the disease with the aid of the specific therapy with Behring's serum; (*b*) local treatment of the affected parts with disinfectants (Löffler's mixture); (*B*) in the patient's house, by disinfection of the diseased products (sputum, membranes), as well as of the sick-room, linen, clothes, etc.

Second—Infection is carried (*a*) immediately to the healthy by the sick (coughing on a second person, kissing, etc.); (*b*) mediately, prohibiting the patient's and relatives from attending school; forbidding people, especially children, to congregate in the houses of the sick or dead; supervising the traffic with victuals. These conditions are of the utmost importance. (*c*) The earliest possible recognition of genuine diphtheria by means of bacteriological examination of all suspicious cases, preferably at special central laboratories; and (*d*) compulsory notification based on the results of these examinations.

Third—Removing the disposition by: (*a*) care of the mucous membrane of mouth and throat; prophylactic gargling with disinfectants; (*b*) immunization with diphtheria antitoxine serum. — *Annals Oph. and Ot.*

Resorcin as a Prophylatic in Diphtheria.

Dr. Binet (*Pharm. Centrab., American Medico-Surg. Bull.*, September 10, 1896) recommends resorcin as an effective, yet harmless, prophylactic in diphtheria. The mouth and nose of the child are washed out morning and evening with a 0.5 per-cent. solution. He prescribes a 20 per-cent. solution of resorcin, of which a teaspoonful is directed to be added to a glass of water.

The liquid has a pleasant taste, somewhat like licorice root, and is more strongly antiseptic than the boric acid, which is more usually employed. W. S.

Citric Acid in Diphtheria.

For many years an English physician has used pure lemon juice as the best tonic for diphtheria and sore throat in general, and mentions a case in which the son of a medical man in one of the Paris hospitals cured himself of diphtheria by constantly sucking oranges or lemons, a small basketful of which was placed for this purpose at his bedside. A Danish physician, Dr. Bock, recommends ten-per-cent. solution of citric acid to be given in spoonful doses every two hours. — *Pacific Record.*

Whooping-Cough.

R	Tr. belladonna	gtt. xxxlj.
	Acid carbol., C. P.	gtt. viij.
	Ammon. bromid.	ʒij.
	Potass. bromid.	ʒvi.
	Aqua menth. pip.	q. s. ad. ʒiv.

M. Sig.—Spray this in child's throat every two hours.

I consider whooping-cough a local nervous trouble; hence a direct application. I have used the above formula for about twenty years. It gives instantaneous relief. The same prescription also relieves hay-fever, rose cold, etc.

DR. J. J. CALDWELL.

Paramonochlorphenol in Laryngeal Phthisis.

Hedderich made a trial of paramonochlorphenol in the treatment of thirty cases of laryngeal phthisis in the clinic of Professor Jurasz at Heidelberg (*Munch. med. Woch.*). All the patients soon, usually after the second application, were relieved of pain; the breathing became easier, the ulcers cleaner and healed, and infiltration diminished. In severe, progressive cases no improvement was perceptible. In only two cases did the improvement amount to cure, and even as to these reserve is necessary, as they were lost sight of. As regards unpleasant effects, in three of the cases, vomiting followed the applications, and the patients felt weak and ill for the whole afternoon after it. Paramonochlorphenol is phenol in which one H is replaced by Cl; it acts like carbolic acid. It dissolves with difficulty in water, but easily in glycerin. For the larynx the author used a 10-per-cent. solution in glycerin, which he applied with a sound wrapped up in cotton-wool. A 20-per-cent. solution produces a white eschar, as liquefied carbolic acid does. This solution he used for the nose and pharynx. The author admits that the results of the treatment in his hands were not brilliant, though he adds that treatment in an out-patient department is subject to many disturbing influences.—*Universal Med. Jour.*

S. S. B.

Iodol in the Treatment of Tuberculous Ulcers of the Larynx.

Dr. Hajek (*Revue Hebdomadaire de Laryngologie*) recommends the insufflation of iodol in the treatment of tuberculous ulcers of the larynx, not on account of any bactericidal power which iodol exerts beyond other antiseptics, but because of two advantages which it possesses. In the first place, it is insoluble and capable of forming a true protective antiseptic layer upon the surface of the ulcer with which it comes in contact. In the second place, it is an admirable disinfectant. After two or three applications the ulcer loses its dirty

aspect, and becomes covered with healthy-looking granulations. In order to obtain all the desired results it is necessary, after each insufflation, to ascertain whether the iodol is deposited exactly upon the ulcerated surface, and if not to repeat the procedure until the lesion is covered. The insufflation ought to be given every three or four days.—*Med. Bulletin.* S. S. B.

Tuberculosis of the Tonsils.

Hans Ruge (*The Medical Standard*) believes tuberculosis of the tonsil is much more frequent than has been heretofore assumed (*Virchow's Archiv.*). It can seldom be demonstrated clinically, because ulceration is often absent. The only symptom may be enlargement of the tonsil. The occurrence of primary tonsillar tuberculosis is probable. He reports what he believes to be such a case, the tuberculous process extending from the tonsil to the cervical vertebrae. He also reports a case in which caries of the spine seemed to have followed tuberculosis of the tonsil. The author made microscopical examinations of the tonsils from seventeen individuals. Seven of the cases had tuberculous deposits in other localities. In five cases, also complicated with pulmonary tuberculosis, tubercle bacilli were demonstrated in the tonsil tissue. These observations of the author agree with the results of Strassman, who found tubercular infection of the tonsils in thirteen out of fifteen cases of tuberculosis of the lungs.

Tuberculous infection may occur in various ways: (1) Through the blood, *e. g.*, miliary and other forms of generalized tuberculosis; (2) through the lymph, *i. e.*, secondary to tuberculosis of the cervical glands; (3) through the sputum, particularly in tuberculosis of the lungs; (4) through the inspired air; (5) through the food, particularly milk and flesh infected with bovine tuberculosis.

The author concludes that the tonsils are an important primary seat of tuberculous infection. Children who suffer from enlargement of the tonsils should not be permitted to live with phthisical relatives, especially if the latter have expectoration. For not only is the inspired air laden with tubercle bacilli, but the food and eating and drinking utensils may be contaminated with bacilli from the air or hands and mouth of the infected one. When the tonsils have been enlarged for a long time they should be extirpated; and removal may be beneficial even when tubercle already exists. S. S. B.

Etiology of Tubercular Cervical Glands, Etc.

According to Mr. Nicolls' observation (*Edinburgh Med. Journal*, Oct., 1896), over 70 per cent. of the cases seen by him were manifes-

tations of bilateral tubercular glands. He believes that a number of the naso-pharyngeal catarrhs with which we so frequently meet are of a tubercular nature. The presence of active tubercle bacilli has been established in the tonsils, follicular glands of the tongue, and in adenoids in persons not suffering from phthisis. Iodoform should be effectually applied after removal of this diseased tissue.

M. D. L.

A Case of Grave Hæmorrhage Consecutive to Tonsillotomy.

After having recalled the four principal causes of hæmorrhage consecutive to tonsillotomy (hæmorrhage in the case of hypertrophied and hard tonsils, hemophilia, special anatomical disposition of the tonsillar vessels, lesions of the carotid), Dr. Piergili reports the observation which he has made of a patient who had had both tonsils removed by means of Fahnestock-Mathieu's tonsillotome. (*Revue Hebdomadaire de Laryngologie, d'Otologie et de Rhinologie*, Oct., 1896.)

The patient had a primary hæmorrhage from the right tonsil seven hours after the operation. The first hæmorrhage was arrested by the means in ordinary use (compression of the carotid, cauterization of the bleeding surface with a concentrated solution of argentic nitrate, sub-cutaneous injection of ergotine, the application of ice, etc.).

The patient had a second hæmorrhage nine hours after the first; a third the next day; a fourth three days after the third; and finally, five days later, a fifth. All the hæmorrhages were arrested in the same manner as the first.

In view, however, of the advanced anemia from which the patient now suffered, and to prevent the possible return of any hæmorrhage, it was decided to ligate the right primitive carotid. This vessel was selected instead of the external carotid as a provision against possible vascular anomaly. The ligature was applied under chloroform. During the two days following the operation, the patient had convulsions and paresis of the right half of the body. On the second day the temperature rose to 104°, but quickly descended to the normal after a rectal injection, which was followed by an abundant alvine evacuation. Gradually the conditions improved, the anemia being combated by injections of citrate of ammoniated iron. It was two months after the operation before the patient was again restored to health.

Tonsillotomy is, therefore, not entirely a trivial operation. Before operating it is well to be assured of the normal position of the carotid and of the consistency of the tonsillar tissue.

Both tonsils should never be removed at one sitting, and, during the operation, the head of the patient should be bent backwards.

When once the hæmorrhage takes place, we should attempt to pass a ligature around the base of the tonsil, and it is only when every other means has been exhausted that we should have recourse to ligating the carotid.

W. S.

A Retro-Pharyngeal Hæmatocele Following Lancing of the Tonsils.

A colored girl, twenty-five years old, suffered from simple tonsillitis (Dr. John R. Winslow, *Journal of Eye, Ear and Throat Diseases*, October, 1896). The right tonsil was lanced, and anti-rheumatic treatment instituted. The patient returned upon the succeeding day with a "tremendous" bulging forward of the posterior pharyngeal wall and right palatine arch, and upon incision a cupful of dark, partially-clotted blood was evacuated. Evidently a small tonsillar vessel had been severed, with hæmorrhage beneath the tissues. The wound healed quickly under antiseptic irrigation without further difficulty.

W. S.

Examination for Tubercle Bacilli.

The examination of sputum for the tubercle bacilli has been attended with some difficulties that Spengler (*Deutsche Med. Woch.*) thinks may be obviated by following this procedure: Equal parts of sputum and lukewarm alkaline water are thoroughly mixed with from two to fifteen grains of pancreatin, and are allowed to digest at the body temperature for from two to three hours, when a few drops of strong carbolic acid are added to prevent putrefaction. A sediment quickly forms. The supernatant fluid is poured off, fresh alkaline water is added, and a further digestion in the incubator is allowed. The sediment after this second digestion is smaller. It is collected on filter paper, and is examined in the usual way for the bacillus tuberculosis.

By this method the sediment from a day's sputum is so small, as a rule, that a few cover-glass preparations only are needed for its thorough examination. There is no impairment of the staining qualities of the bacilli, and Spengler has found this a very quick and reliable method of examination when the tubercle bacilli are present in small numbers. It is, of course, unnecessary when they are abundant.—*American Journal of the Medical Sciences.*

Cancer of the Larynx.

Prof. Störk, of Vienna (*Engl. Med. Press*, Dec. 25, 1896), concludes that all statistics are valueless. The diagnosis of the disease should be made early, when the trouble is still within the limits of the cricoid.

and thyroid cartilages. In advanced cases the glands of the neck are affected, and in these operation had no object. The artificial larynx is not a good substitute, as the patient cannot breathe with it, and he would rather be aphonic than have his respiration interfered with. B. Fraenkel states that as long as we treat the sick we must operate, even if the disease attacks the œsophagus. The chances must be placed before the patient, and the latter must decide. In extreme cases he removes the entire larynx, without regard to the pharynx. The trachea is sutured to the skin, and the other cavity is closed, so that only a passage for the food is left. Semon remarks that all cases of chronic hoarseness should be examined by experts, as cancer of the larynx was permanently curable so long as it was limited to the vocal cords. Sixty-six per cent. of his cases had recovered. M. D. L.

An Enormous Fibroma of the Larynx.

Hoarseness and dyspnea were symptoms complained of by a patient 61 years of age. These manifestations were greatly increased during the four months previous to his consulting the author (Chiari, *Brit. Med. Jour.*). The patient spoke best when the head was bowed forwards. Laryngeal examination showed a tumor one and three-quarter inches long by one and one-half inches broad. It appeared to rise from the right aryteno-epiglottidean fold, and which during expiration or phonation was pushed out of the larynx, concealing the view of the larynx. The growth appeared soft and lobulated, with visible vessels over its surface. It seemed to vary in size on different examinations. Tracheotomy was performed, and after cutting through the first two rings of the trachea, the tumor immediately appeared, proving that it was larger than at first supposed. Asphyxia followed the introduction of the canula, and the operation had to be stopped while artificial respiration was being carried out. The whole growth was finally removed through the wound by means of a hot platinum wire. The tampon and canula were removed on the fourth day, and except for some cedematous swellings on the false cords, which were excised, the patient made a good recovery, with a strong but rough voice. The tumor was the size of an apple, and was composed of connective tissue similar to a soft fibroma. It was attached to the right aryteno-epiglottic fold and false cord. It was very vascular, though little bleeding occurred at the operation. Its dimensions were two by one and three-quarter inches by one and one-half inches.

M. D. L.

A Case of Epithelial Tumor Developing in the Neighborhood of the Thyroid Gland, and Which Terminated in Death by Asphyxia.

Drs. Byonca and Meniere report the case of a sixty-seven-year-old man, who had already undergone thyroidectomy, who was emaciated and suffered from progressive dyspnea, with frequent coughing, aphonia and cyanosis. There was no edema of the glottis, but marked paresis of the vocal cords, which remained in the position of abduction; there were no internal signs of a tumor. (*Ann. des Mal. de l'Oreille et du Larynx.*, May, 1896.) It was thought that there was a retro-sternal compression in the trachea, due probably to an accessory thyroid. Death, which followed, was due to the progress of asphyxia.

The autopsy showed that the inner part of the trachea was surrounded by a grayish-white tumor, in the substance of which there were small foci of caseous softening. The trachea was strongly flattened, as also the œsophagus, from the pressure of the neoplasm.

The microscopical examination demonstrated that it was a fibrous carcinoma, originating from the thyroid body; it is probable that this tumor developed from the goitre, the removal of which had not entirely relieved the patient.

W. S.

Relation Between the Female Sexual Apparatus and Laryngeal Affections.

At the sixth reunion of Belgian Laryngologists (*Revue Internat. de Rhinol.*) M. Bayer said that his investigations had demonstrated that a physiological and pathological relationship existed between the sexual apparatus of the female and the larynx (*Medical Bulletin*). He cited in illustration a recently observed case. On May 9 of the present year he was consulted by a woman, 34 years of age, with pronounced symptoms of laryngeal stenosis (dyspnea, aphonia, cough, expectoration, etc.), in short, of advanced tuberculosis. Laryngoscopic examination revealed an ulcerous tuberculous laryngitis, with swelling of the epiglottis, arytenoids and interior of the larynx to such an extent that the glottis was reduced to a narrow slit. It seemed that tracheotomy was demanded, and the patient was referred to the service of the speaker at the surgical institute; however, the operation was postponed on account of an abortion. She was three months pregnant and had neglected to speak of her condition. M. Bayer was asked to visit the woman at her home, and, to his astonishment, eight days after the abortion, found that the swelling of the larynx had subsided so that there could be no question of tracheotomy,

and her entrance to the hospital was no longer necessary. She was placed upon a treatment of 20 per cent. creosoted vasogene with super-alimentation and hygienic care, with subsequent local treatment.

It appears from the foregoing case that pregnancy may exert upon laryngeal affections an influence analogous to that which M. Bayer has, in several cases, witnessed in menstruation. In such cases, therefore, we should never neglect to inquire into the condition of the sexual organs, which might reveal valuable indications in relation to rebellious laryngeal symptoms.

S. S. B.

Thyrotomy (Crico-Thyrotomy) for Removal of Intra-Laryngeal Growths.

In an interesting and valuable paper, in which a series of cases upon whom the operation was performed are tabulated, Walker Downie M. B. (*Glasgow Med. Journal*, Oct., 1896) gives his results and some practical suggestions. If the growth is benign and simple in formation, it should be removed, if feasible, through the natural passage. With papillomata, however, the growths are usually multiple, the area affected is widespread, and recurrence so often happens that he advises thyrotomy as being a more serviceable method. He first performs a tracheotomy a few days previous to opening the larynx, so that the patient may become accustomed to the tube. When the cartilages are exposed and the bleeding is checked, he withdraws the tracheotomy tube, and same is introduced after the larynx has been packed with gauze. He practices division of the thyroid cartilages throughout their entire length, and removes the growths individually. After all diseased tissue is removed, the divided structures are brought together and held by strips of adhesive plaster. On the following day the packing is removed and the galvano-cautery is applied to the formerly diseased area, as well as all suspicious points. The cut edges of the cartilage are then carefully adjusted and sutured, as is also the skin incision. If no contra-indications arise, the tracheotomy tube may be removed on the second day. Out of eight cases operated upon for fibroma, papillomata, cedematous granulation, tissue from the sub-glottic region, epithelioma and mucous polypus, one case died of septic pneumonia. In the others good results are recorded. In one of the above cases the laryngeal stenosis was due to syphilitic ulceration and cicatrization.

M. D. L.

Resection of the Trachea.

Föderl reports the case of a boy, 6 years old, in whom the trachea was resected on account of the obliteration of the passage (*Engl. Med.*

Press, Dec. 25, 1896). The mother in a fit of madness cut the child's throat, which was afterwards sewn together, while a canula was inserted. On examination, Stürk found the vocal cords adherent, with a narrow communication between the trachea and larynx. Gussenbauer found it necessary to perform tracheotomy, so the opening was extended to the original fistula, where the larynx was found dislocated. After adaptation and readjustment the wound was closed, and in five days the canula was removed, leaving the breathing free and the voice clear.

M. D. L.

Laryngeal Stenosis.

A peculiar case of laryngeal stenosis, with fatal issue, is reported by Backlund (*Göteborg läkaresällskaps förhandlingar*). The patient, a child, 20 months old, was received into the Göteborg Hospital for Infectious Diseases on account of severe symptoms of croup. Tracheotomy was performed, but the child died. At the post-mortem examination the author found the needle of a fir-tree immediately beneath the rima glottidis. It was 1.5 centimetres long. The lungs were atelectasic, and there was some broncho-pneumonia.—*Universal Med. Jour.*

S. S. B.

A Case of Œsophageal Hæmorrhage With Cirrhosis of the Liver.

The cases reported, and two other cases referred to by G. M. Garland, Boston (*Boston Med. and Surg. Jour.*, September, 1896), show that hæmorrhage from the Œsophageal veins may precede many of the other and more familiar symptoms of cirrhosis. On the other hand, a certain number of cases have been reported where hæmorrhage from the Œsophageal veins occurred without cirrhosis of the liver, so that hæmorrhage from these veins cannot be considered an infallible symptom of cirrhosis.

W. S.

Ethyl Bromide Anæsthesia in Minor Operations.

In the discussion of an excellent article on "Novelties in Anæsthetics and Anæsthesia," by Dr. E. Souchon, before the Orleans Parish Medical Society, Dr. Scheppegrell stated that he had had at first difficulty in obtaining pure ethylic bromide; but in the last two years, by ordering Merck's preparation in sealed tubes, he had had no difficulty in this respect. Leaving out the element of danger, although he had heard of no trouble since the use of the pure article, one objection is that, as soon as the patient is fully under the influence of ethyl bromide, there is a tonic contraction which often causes serious delay, as

you lose valuable time in inserting the gag; in fact he has seen teeth forced out in such efforts.

For over a year, however, he has overcome this difficulty in the following manner: The assistant applies the inhaler, well saturated with ethylic bromide, to the nose of the patient for a few seconds, until the patient, who is in a sitting position, shows the first signs of relaxation; then the mouth is quickly opened by inserting a tongue depressor, the gag put in and the anæsthesia continued. In about sixty seconds the patient is well anæsthetized; the mouth is at once opened by means of the gag, and the patient is ready for the operation.

The objection that the anæsthesia lasts only for a minute or two is of no great importance, as this time is quite sufficient for removing tonsils or adenoid growths.

The effect on different persons is dissimilar. He has known patients to sit down and take the ethylic bromide, and in three minutes get up and complain of no bad effects. In the majority of cases, however, there is a period of nervous excitement, which lasts for an hour or more, which is a disagreeable feature in the use of this anæsthetic.

He has twice seen cases of enuresis from the use of ethylic bromide, and both times in the same patient. Believing that the assistant might have given the anæsthetic too freely when this occurred the first time, it was administered very sparingly on the second occasion, but the enuresis took place as soon as the patient began to relax. Curious to relate, this patient appeared to suffer no ill after-effects from the ethylic bromide, and the nervous irritation, which frequently follows, was not apparent in his case.—*Proceedings of the Orleans Parish Medical Society*, 1895.

Iodide of Potassium or Iodide of Sodium.

According to Briquet (*Revue Internationale Médecine et de Chirurgie*, April, 1896) the sodium iodide is preferable to potassium iodide in all maladies of the respiratory tract and for certain rheumatic pains. The potassium salt is badly tolerated in many instances of hepatic disease, but is undeniably good in these cases. He has found that where the patients do not tolerate iodide of potassium well the employment of iodide of sodium first prepares them for the potassium salt. He has also been able to get the effect of the iodine in many patients by the use of the sodium salt when the potassium was contra-indicated because of its depressant effect.—*Therapeutic Gazette*.

Foreign Body in the Larynx.

Alarik Lindh (*Göteborg läkaresällskaps förhandlingar*) describes the case of a child, 8 months old, who, while playing with a paste-board box swallowed a corner-clip of tin bent rectangularly. Lindh cut through the cricoid cartilage and the first tracheal ring and dilated the incision, and then pushed up the foreign body into the pharynx by means of a sponge-holder with a small sponge attached. He then introduced a silver canula, which he removed four days later, the child recovering—*Universal Med. Jour.* S. S. B.

A Jack-Stone in the Oesophagus Located by the Fluoroscope and Removed After Performing Gastrotomy.

A three-year-old child, while playing with jack-stones, was observed to be choking, from which he had become "blue" in the face (Alfred C. Wood, Philadelphia, *University Med. Mag.*, October, 1896). His mother came to his assistance, and on introducing a finger into the child's mouth felt a jack-stone, which was accidentally pushed further down in the attempt to extract it.

The child was unable to swallow any solid food after the accident, and four days later began to refuse liquids, which it took at first, but with some difficulty.

Although the history seemed definite, the positive information by means of a skiagraph was deemed advisable. The child, however, was too unmanageable to allow the skiagraph to be taken with the apparatus on hand, which required one-half hour's exposure, so the fluoroscope was tried, and the observer could plainly see the foreign body in question. After the positive information obtained with the fluoroscope, and the failure to remove the obstruction by means of the oral methods, a gastrotomy was done, and the jack-stone successfully removed. Convalescence was uninterrupted and uneventful. W. S.

The Intrinsic Movements of the Vocal Cords and the Treatment of the Singing Voice.

In the December issue of *The Pacific Medical Journal* appears an admirable paper on the above subject, read before the San Francisco County Medical Society by Dr. Frank Donaldson, Professor of Physiology, College of Physicians and Surgeons, San Francisco.

The author first points out that the intrinsic movements of the cords were not studied until 1878, when Oertel described an instrument, the laryngo-stroboscope, which he used to examine the vocal cords during phonation; but it was not until 1895 that he described the perfected instrument and the results of experiments with it upon the larynx.

Dr. Donaldson fully illustrates his article with cuts of the stroboscope (which is a refined modification of the toy of that name), and of the end of the vibrating cords as seen with it.

If the vocal cords of a singer are examined with this instrument, and the lowest note is sounded, while the disk of the stroboscope made to revolve more slowly than the rate of the oscillation of the cords, these will be plainly seen to vibrate through their entire length and breadth, the vibrations being synchronous, and the extent of the oscillation extensive.

In the *upper* register, however, the vocal bands are seen vibrating through their entire length and breadth, but character of the movements is entirely altered. The vocal cords are flatter and thinner, and are divided into two segments, an outer and inner, which have their own rates of vibration.

Donaldson regards the treatment of the larynx as generally a reproach to our art as regards that form of trouble present in voice-users—actors, speakers or singers—as a result of constant strain, overwork, or of a faulty method of voice-production. He deprecates the prevalent use in such cases of astringents to the cords, either directly or by inhalations and insufflations, which, he asserts, may temporarily improve the condition of the cords, but do not remove the cause of the hoarseness and vocal break-down. He especially objects to silver nitrate. While absolute rest of the cords helps, Donaldson says that it is a very serious matter often to the patient, and besides does not permanently relieve.

The real causes of condition are faulty methods of breathing and of vocal training, and the desideratum in this respect is fulfilled by the method of Curtis, of New York, which he introduced in 1893. Curtis' method is described, and also its points of difference from other methods, and Donaldson has found it surprisingly successful.

He examines the nose and naso-pharynx carefully in all cases of vocal strain, and calls particular attention to "the tremendous influence of the upper cavities in the formation of tone," and to the importance of removing all abnormal conditions found therein.

F. B. E.

The Development of the Higher Vocal Register by Electricity.

In the consideration of the subject, Wm. H. King, in the *Homeo. Eye, Ear and Throat Journal*, Dec., 1896, gives an interesting description of the physiology of sound and the larynx, and some practical suggestions concerning the application of electricity to the laryngeal muscles. The comparison of the vocal organs to various

musical instruments is maintained throughout; the differentiation of tones and overtones is clearly explained. "If we analyze the vibrations of the string of a musical instrument, we find it is composed of two distinct sets of vibrations, those of the string as a whole, unless it is dampened, and those of sections of the string which vibrate independently. The result is a difference in the notes produced by the two sets of vibrations. The note produced by the vibrations of the string as a whole is known as the fundamental tone, while the higher ones produced by vibration of sections are known as overtones. It is these overtones which give the distinctive sounds to different musical instruments, and were it not for them the human ear would be incapable of distinguishing a piano from a violin or other musical instrument."

"We find the vibrations produced by the vocal cords are re-inforced by vibrations of a sounding-board located in the mouth and upper air passages, which in turn produce vibrations that are conveyed to the human ear.

"The singer has the power, by certain muscular movements to so change the light of vibrations produced by the vocal cords, by changing the shape and length of the cavity of the mouth, that he can by this means change the pitch of the fundamental tones. He can adjust and proportion the length of the vibration, but his power in this direction is limited, and in order to produce the higher overtones, or in other words the higher notes, there must be an increase in the rate of vibrations of the vocal cords."

The author then considers the application of electricity as a means of obtaining increased rapidity of vibration of the cords.

The musculature of the larynx is discussed at length, and the relationship of the nerve supply of these muscles to the electric current is emphasized.

The purpose of the article is to indicate the value of electro-therapy applied to the superior laryngeal and recurrent laryngeal nerves in the development of the groups of muscles supplied respectively by these nerves.

The author opposes the opinion of Morrell McKenzie that "electricity applied externally acts as a local tonic only and may be useful in allaying irritation, etc., but it is of no use in developing muscles. In order to accomplish this it must be given internally, as one author quoting this opinion says, so as to pass through the muscles."

"The reason why Dr. McKenzie did not have success with the external application was due to a faulty understanding of the use of electricity in muscular development."

The current to be applied, as advocated by the author, is the interrupted galvanic current.

The small-size Erb electrode, preferably of oval shape, is the electrode selected. The first motor point is reached by placing the electrode along the posterior border of the thyroid cartilage, about an eighth of an inch above the line drawn directly backward from the pomum Adami. The second motor point is located by carrying the finger back along the side of the cricoid cartilage until the point of articulation with the inferior corner of the thyroid cartilage is reached. Just back of this point the distinct beats of the carotid artery will be felt. The electrode should be firmly pressed between these two points, and the nerve (inferior laryngeal) will at once respond.

The last consideration of the paper deals with the condition in which this treatment is applicable.

The fact that this treatment has to be given to each side of the larynx separately makes it particularly applicable in conditions of unilateral weakness of the muscles.

General weakness of the laryngeal muscles; atrophy of the muscles from over-use, so frequently observed in professional singers; also those conditions in which a passive congestion of the vocal cords and the surrounding tissues is observed—all these come within the range of the interrupted galvanic current applied according to the method described.

OTOLOGICAL.

Binaural Hearing.

Bloch (*Arch. of Otolaryngology*) sums up the characteristics of binaural hearing as follows:

1. With binaural conduction of a sound there is an alternating increase in the auditory impression.
2. This increase grows less as the two auditory impressions become more dissimilar.
3. It depends, probably, not only on the addition of the bilateral acoustic excitation and the transference of the perception to the interior of the head, but also on an actual central increase of excitability.
4. With the binaural conduction of a tone or a noise into the auditory canal, or in its neighborhood, the sound is heard in the head.

5. The subjective auditory field lies on the side of the stronger perception. By changing this, the location of the field may be altered at will.

6. Its location in the median plane, and the perception of the character of the tone, depend on the relation between the phases of the sound waves on each side.

7. The most important function of binaural hearing is the recognition of the direction of sound.

8. This is more perfect in the horizontal and frontal planes than in the sagittal.

9. In the two former it depends chiefly upon the comparison of the intensity of the sound perception on both sides, and in less measure on the influence of the auricle on the conduction of the sound waves to the canals.

10. In the sagittal plane the last factor alone comes into play.

11. Different characteristics of the sound, such as its duration, intensity, and timbre, influence our judgment of the direction, particularly in the sagittal plane, corresponding to the more frequent excitation of the auditory nerves, and the repeated experiences of daily life.

12. In the estimation of the distance of a sound, we judge less from the total intensity than from the intensity of the component single sounds.

13. The judgment of the direction of sound with one ear alone is very poor.

14. It does not seem necessary, in judging of the direction of sound, to take into account any other than the physiological and psychological factors here discussed.—*N. Y. Med. Jour.*

Otological Peculiarities of the Negro.

Roaldes (*Rev. de Laryngol. et d' Otol.*) notes that in the negro the concha is smaller and more fleshy than in the white. The outlines of elevations and depressions of the anterior surface are less graceful. The concha is more closely applied to the skull than in the white. The external auditory canal is more developed and spacious and much straighter in the negro. The mastoid apophysis is less developed, the cortical portion is harder and thicker, and the antrum is less spacious in the negro. The naso-pharynx is very much more spacious, the mouths of the Eustachian tubes are much larger in the negro, and the nasal septum is much straighter and more regular than in the white. The negro is much less prone to eczema of the auricle and canal, but is more liable to keloid degeneration than the white. Deafness of all kinds is much less common in the negro, and this is also true as regards deaf-mutism.—*N. Y. Med. Jour.*

On the Use of Tannin in Powder, in Chronic and Subacute Suppurative Otitis Media.

This remedy has given good results in the author's hands (O. D. Pomeroy, in *N. Y. Polyclinic*, Nov. 15, 1896). It must not remain in the ear for any length of time as it soon becomes converted into a black crust, which is thought to be the oxide of tannin and is difficult to remove. The ear should be douched every few days, as the crust is not likely to have formed at this time. It has no decided action upon granulation tissue, but what is called a granular surface is soon reduced to a pale dry skin like non-secreting membrane under its application. A pultaceous, soft or relaxed secreting tissue rapidly responds to its action. It is not to be employed in diseases of the attic, or if any carious or necrotic bone requiring removal is present. After the extractions of the diseased bone, it may be applied. A number of cases are cited in which the remedy acted satisfactorily.

M. D. L.

Study of the Various Methods of Treatment of Chronic Purulent Otitis Media.

Dr. Hammon du Fougeray believes with Pollo, of Nantz, and the majority of prominent specialists, that there is no universal treatment for otorrhœa, but that each case has its special indications. (*Ann. des Maladies de l'Oreille*, etc., June, 1896). A good form of treatment, in his opinion, would be the one which unites the four following conditions:

1. Disinfection of infected surfaces.
2. Assuring the discharge of pus by drainage.
3. Avoiding mechanical or chemical irritation.
4. Preventing secondary infection from without.

He avoids injections in the greater number of cases, as their sole object is to wash the canal, but not the tympanum; the use of boric acid powder is admissible, provided it does not prevent the free discharge of pus. He prefers the methodic tamponnage with gauze, although he has not definitely fixed on the particular kind, as the iodoformed, the salicylated and the sublimated are too irritating for the auricular canal; he is now making experiments with the chinoline naphthalated gauze of Haug.

Dr. Hammon believes that 60 to 70 per cent. of chronic otorrhœas can be cured in this manner, without the least curetting or cauterization, the extraction of polypi or of the ossicles. We are justified in making use of the surgical methods only after a sufficiently prolonged treatment of the above method, which he designates under the name of "methodic tamponnage with antiseptic gauze."

W. S.

Electrolysis in Stricture of the External Auditory Canal.

Acquired connective tissue strictures of the external auditory canal usually may be ascribed to ulcerations in the course of chronic middle ear inflammations (Ostmann, in *Berl. Klin. Woch.*, No. 34). The granulations spring up, meet and fuse, thus leading either to complete connective tissue atresia, or stenosis of greater or less degree. If the suppuration from the middle ear continues, greater danger from pus retention arises. Operative interference has been quite unsuccessful, as the stricture tends to form again; dilation by means of tents or galvano-caustic destruction do not give permanent results.

In surgical procedures for the relief of such strictures there is the danger of infection of the wound by the purulent secretion of the tympanum.

Ostmann successfully removed a considerable connective tissue stricture by electrolysis. After thoroughly disinfecting the canal, a double needle was thrust, at the upper wall, through the base of the stricture, and a galvanic current of four or five milliamperes passed for five minutes. In four sittings the stricture was permanently removed. Even with weak currents the pain of this electrolysis is quite severe, and cocaine may be applied. The inflammatory reaction is slight. The result is permanent in the case reported. — *Annals Oph. and Ot.*

Thrombosis of the Petrosal, Cavernous and Circular Sinuses Occurring in Scarlet Fever and Due to Acute Suppurative Otitis Media.

This fatal sequela occurred in a child 17 months of age (J. W. Stirling, *Canada Med. Record*, Nov., 1896). The patient was referred to the author for the inflammation of the middle ear, which rapidly involved the mastoid. A mastoid operation was performed and the posterior wall of the external canal, together with considerable carious bone surrounding the sinus, was removed. Three days later intense œdema of the left upper eyelid developed, which so rapidly increased that the eye could not be examined. On the next day the right lid became swollen. There was no acute inflammation of the front of the eye at the onset. This swelling soon subsided, but the patient remained in a semi-comatosed condition, and died three days later.

The autopsy revealed thrombosis of the left superior petrosal, the cavernous and circular sinuses. It was a parietal thrombus adherent to the walls of the sinus. The clot did not completely fill the lumen of the vessels, but was fairly organized. The infection was supposed to have followed through the small veins of the attic of the middle

ear which empty into the superior petrosal sinus. The eye symptoms on the right side pointed to an extension through the circular sinus.

M. D. L.

Some Recent Modifications in the Surgical Treatment of Diseases of the Attic and Mastoid Process.

Adolph Bronner calls attention to the frequency of diseases of this region, and remarks that operative interference in such cases is too often postponed (*Brit. Med. Jour.*). He agrees with Schwartze, Stacke and Macewen in their methods of exposing the middle chamber, and causing the mastoid antrum, external canal and middle ear to form one large cavity. He prefers Macewen's operation of prolonging the post-auricular incision around the upper portion of the auricle, thus permitting the ear to be drawn downwards and giving a better view of the diseased parts. All affected tissues should be removed. In cases of cholesteatoma a permanent opening can be kept by inserting a flap, formed from the skin behind the ear, into the mastoid wound. As long as there is any rise in temperature, or much discharge, the mastoid wound should be kept open. The author advocates exploratory incisions in doubtful cases. (This sentiment harmonizes with the suggestions offered by the abstractor in an article entitled: "Cerebral Disease following Middle Ear Suppuration."—*Journal A. M. A.*, Sept. 12th, 1896).

In conclusion, Dr. Bronner endorses the indications for opening the mastoid as given by Schwartze:

1. In acute, primary or secondary inflammation of the mastoid process, if under treatment, the symptoms do not improve in a few days.
2. Chronic inflammation of the mastoid, with recurrent attacks of swelling.
3. Fistula over or near the mastoid.
4. Chronic inflammation of the middle ear without apparent affection of the mastoid, if there are any symptoms of retention of pus, or diseased bone (pain, fever, etc.), or if there is a cholesteatoma.
5. Persistent pains over the mastoid process.
6. Chronic otorrhœa without any symptom of retention of pus or swelling of mastoid, as soon as we have reason to think that the inflammation has spread beyond the middle ear.

M. D. L.

Modification of Stocke's Operation.

This modified method is offered by M. Gellé (*Journ. L. R. et O.*, Dec., 1896), in order to avoid the chance of wounding the facial nerve and the horizontal semi-circular canal. After opening the mastoid

cells and infundibulum of the antrum in the usual manner, the author puts aside the chisel and mallet, and substitutes a small chain saw to cut away the remaining bridge of bone. The links of the chain are short and the instrument easily passes from the antrum to the open tympanum, guided by a wire previously introduced. Two cuts are made, one from above downwards, directed towards the apex; a second horizontal. In this manner the cutting of deep parts is made from within outwards, and takes place external to and below the important tissues. This instrument has only been used on the cadaver.

M. D. L.

Foreign Body in the Ear Resulting Fatally.

Voss (*La Sem. Med. de St. Petersburg*, Jan. 10, 1895) reports the case of a child five years old, who pushed a dry pea into his ear. Four doctors spent several days endeavoring to extract this body, and only succeeded in pushing it quite out of sight. On the fifth day the foreign body was embedded in the tympanic cavity, whence it was removed after dissecting the ear forward and opening the posterior wall of the auditory passage; the tympanum was crushed, the ossicles were broken, the cavity was suppurating. The fever from which the child was suffering at the time of abstraction continued, and the patient became comatose and perished four days later.—*Medical Progress*.

S. S. B.

NEW INSTRUMENTS.

A Modified Nasal Snare.

The original Jarvis has been subjected to numerous modifications; the most recent improvement is reported by Samuel Goldstein in the *N. Y. Med. Journ.*, Dec. 12, 1896. To the Sajous form of the Jarvis snare is added a small canula for the application of a transfixion needle. Finger rings are added laterally to afford the operator a firmer hold of the instrument.

Speculum Devised for the Purpose of Facilitating Examination of the Post-Nasal Space in Difficult Cases.

Dr. Wood (*Journal of Laryngology*, October, 1896) describes an apparatus consisting of a Gutsch's mouth speculum, into the front of which a pane of glass is fitted, thus preventing the patient from breathing through the mouth, and compelling him to breathe through the nose, thus relaxing the soft palate. The tongue is at the same

time kept down by the blade intended for that purpose in the original instrument. Thus both the nose and the mouth are necessarily open to the throat, when by putting the post-rhinal mirror into position (the stem lying between the lips and the speculum) the post-nasal space can be easily examined. The glass pane is placed at a slight angle, on the same principle as the glass in Siegel's ear speculum, and for the same purpose, *i. e.*, so that the light from the forehead mirror should not be reflected back to the eye.

The instrument is made by Messrs. Meyer & Meltzer. On account of the difficulty in having the maker carry out his design, Dr. Wood has thus far had but little experience with this new instrument. He thinks that the instrument should be made of several sizes, so as to fit different mouths, and also that the tongue plate should be made of bendable material so that it might, if necessary, be accommodated to each patient without running the risk of breaking it after prolonged use.

(All rhinologists have experienced the difficulty of obtaining a post-rhinoscopic view of many of their patients. If Dr. Wood's instrument will facilitate this, it will prove a great convenience to the profession. W. S.)

BOOK REVIEWS.

Manual of Diseases of the Ear, Including Those of the Nose and Throat in Relation to the Ear. For the Use of Students and Practitioners of Medicine. By Thomas Barr, M.D., of Glasgow, Scotland. Second Edition, Entirely Revised and Entirely Re-written. 229 Illustrations. 8vo., pp. 415. [New York: The Macmillan Co. 1896. Price, \$3.50.]

Dr. Thomas Barr, of Glasgow, Scotland, has long been very favorably known to the medical profession as an earnest worker in the field of otology. He has done a good deal of original work.

In looking through this manual the evidences of thorough study and a large amount of arduous labor are manifest. The anatomy of the ear is beautifully shown, and many of the surgical operations are given by illustration in detail, making the book a valuable one to the practitioner and student.

The outline of the examinations of the ear are instructive even to those who have devoted a number of years to the practice of the diseases of this organ. First, examination by the unaided senses, then by the Eustachian catheter, then the methods of testing the hearing by different means. He gives the symptomatology, etiology and treatment as carefully.

The affections of the nose and throat in their relations to the ear are given in the next chapter. They are far more complete than any other of the English works on otology.

The anatomy and the surgery are certainly very good, and many new points are brought out, as well as many points that are very important are given properly-increased emphasis.

The title of each subject is made pleasantly and usefully prominent by black-faced type, so that in running the pages over the eye is arrested by the subjects of interest to the reader.

The publishers are to be congratulated upon their work.

While agreeing that this is a very valuable work, and that it should be found on the table of every otologist, yet there are some expressions upon anatomical, physiological and pathological points on which I hold somewhat diverse views, but time will not allow their mention at present. In a future issue I propose to take some of these points up and discuss them *seriatim*.

THOMAS F. RUMBOLD.

Reference-Book of Practical Therapeutics. By various authors. Edited by Frank P. Foster, M.D. In two volumes. Volume I., pp. 652. [New York: D. Appleton & Co. 1896. Price, cloth, \$5; sheep, \$6; half mor., \$6.50 per volume. Sold by subscription only.

The editor, Dr. Foster, has aimed to present to the profession a ready reference-book, and has succeeded admirably. The primary object of presenting a book essentially for the daily wants of the practitioner has been kept constantly in view. A quick reference can be made, not only to drugs, but other agents as well, such as baths, exercise, massage, electricity, mineral waters, serum therapy, etc. Remedies that have become obsolete or used only in semi-civilized countries have been dropped. Many of the so-called proprietary remedies have been taken up, among them antikamnia, so well known to the profession; bromidia, another St. Louis product. No mention is made of campho-phenique, although this remedy has become almost a specific in some forms of aural disease. About fourteen pages are devoted to serum therapy, and the subject has been so handled as to convey to the reader a picture of the actual state of our knowledge regarding these matters.

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Thirty-three prominent men have assisted the editor. Volume I. is complete to *Myrtol*.

BOOKS AND PAMPHLETS RECEIVED.

Aural Herpes. By L. S. Somers, M.D. Reprint *American Medico-Surg. Bulletin*, Oct. 31, 1896.

Use of Nitrate of Silver in the Pharynx. By L. S. Somers, M.D. Reprint *Med. and Surg. Reporter*, Nov. 21, 1896.

Solutions Dobell. By Edw. Pynchon, M.D. Reprint *Annals of Ophth. and Otology*, Oct., 1896.

Conservative Treatment of Some Forms of Nasal Obstruction. By J. A. Stucky, M.D., *Louisville Medical Journal*.

Excision of the Ossicles and Membrane in Chronic Suppuration of the Middle Ear. By J. A. Stucky, M.D. Reprint *Richmond Journal of Practice*.

Aural, Nasal and Laryngeal Tuberculosis, with Special Reference to the Adirondacks as a Winter Health Resort. By Sargent F. Snow, M.D. Reprint *Buffalo Med. Journal*.

NEWS ITEMS.**Tonsil Literature.**

The *Journ. of Pract. Med.*, Dec., 1896, is responsible for the statement: "during the past ten years over 600 papers have been written on the tonsils."

Resolutions Against Lodge Practice.

The physicians of Santa Clara County, California, have taken the "bull by the horn" and rid themselves of the necessity of competing with "Lodge Physicians" by adopting the following resolutions:

WHEREAS, Rendering professional services at a stipulated fee per capita per annum is derogatory to the dignity of the medical profession, we, the undersigned physicians and surgeons of Santa Clara County, California, enter into the following agreement:

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Genito-Urinary.—Prof. D. J. Hayes, of Milwaukee, Wis.

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Diseases of Children.—Profs. Rosa Engelmann, J. C. Cook.

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